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Rocks and Minerals

Official Journal of the Rocks and Minerals Association

A Magazine for Mineralogists, Geologists and Collectors

September, 1947

35c

Vol. 22, No. 9 *Whole No. 194*

NEW ARRIVALS FROM BRAZIL

The following minerals were selected personally from one of the largest lots of mineral specimens to arrive in this country from Brazil. We were extremely fortunate to have the "pick of the lot" from a well known collector who spent many years in the interior of Brazil during the war when practically all mines were in full production. Minerals listed are in the moderate price range and we can also supply exceptional specimens of larger sizes of most of the varieties at comparatively higher prices.

SPODUMENE—Governador Valadares, Minas Geraes, Brazil. Transparent, colorless, irregular shaped crystals from ⅜" to ½" wide by 2" to 4" long, priced at **$3.00; $4.00** and **$6.00** each.

RUTILATED QUARTZ—Diamantina, Minas Geraes, Brazil. Beautifully polished slabs of transparent quartz enclosing golden rutile needle crystals. Sizes approximately 2" x 2" x ½" **$2.00** and **$2.50** each; 2" x 3" x ½" **$3.00** and **$4.00** each; 3" x 3" x ½" **$4.00** and **$5.00** each.

BRAZILIANITE—Conselheira Pena, Minas Geraes, Brazil. Specimens of this new and rare mineral that show four or more crystal faces. Sizes from 1" to 1½" are priced at **$2.00; $3.00; $4.00** and **$5.00** each.

TOPAZ—Dom Bosco, Minas Geraes, Brazil. Terminated crystals of deep honey color topaz. Sizes 1¼" to 2½" long are priced at **$1.50, $2.00, $2.50** and **$3.00** each.

SIMPSONITE—Alto do Giz, Rio Grande do Norte, Brazil. One of the rarest of tantalum minerals. Parts of crystals containing one or more faces approximately ⅜" to ⅝" at **$1.00, $3.00, $4.00** and **$7.50** each. Simpsonite will fluoresce cream to pale blue under the Mineralight.

PHANTOM QUARTZ—Diamantina, Minas Geraes, Brazil. Selected quartz crystals enclosing one or more phantoms that are plainly visible. Crystals 2½" to 4" long priced at **$2.00, $2.50, $3.00** and **$3.50** each.

QUARTZ with movable **BUBBLES**—Fundao, Espirito Santo, Brazil. Smoky and amethyst quartz enclosing at least one movable buble. Sizes of crystals approximately 2" are priced at **$2.50** and **$5.00** each.

CHRYSOBERYL—Tancredo, Espirito Santo, Brazil. Greenish-yellow twinned crystals of fine quality. Sizes from ⅜" to 1¼" at **$1.50, $2.50, $3.50, $5.00** and **$7.50** each.

MORGANITE—Minas Geraes, Brazil. Small pieces of transparent irregular crystallization but of good pink color. Sizes from 1" to 1¾" are priced at **$2.00, $3.00** and **$5.00** each.

TOURMALINE—Governador Valadares, Minas Geraes, Brazil. Red and bi-colored red and green terminated crystals. Sizes ½" to ¾" at **50c** and **75c** each; 1" at **$1.25** and **$1.50** each; 1½" at **$2.50** and **$3.50** each; 1¾ at **$7.50** each.

AQUAMARINE—Baixo Guandu, Espirito Santo, Brazil. Terminated transparent crystals, colorless to pale blue. Sizes from 1" to 2½" are priced at **$1.50, $2.50, $3.50, $5.00** and **$7.50** each.

Please include enough for postage and insurance. Any overpayment will be refunded immediately.

Please keep in mind that we can supply larger and better specimens of most of the above minerals at comparatively higher prices. Descriptions upon request.

SCHORTMANN'S MINERALS

#6 and 10 McKINLEY AVENUE **EASTHAMPTON, MASSACHUSETTS**

ROCKS and MINERALS
PUBLISHED MONTHLY

Edited and Published by
PETER ZODAC

SEPTEMBER
1947

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ROCKS and MINERALS PEEKSKILL, N. Y., U. S. A.

The official Journal of the Rocks and Minerals Association

CHIPS FROM THE QUARRY

Dealers Form Association

A movement is now on foot among a group of dealers in minerals, lapidary equipment, etc., to form an association for the mutual benefit and protection of each member. The purpose is to exchange credit information, stabilize prices, correct any practice of injury to dealers etc. Twenty prominent dealers are acting as temporary directors of the association, adopted "National Equipment and Dealers Mineral Institute" as its official name, and selected Col. Fain White King, of 2700 Washington Ave., Cairo, Ill., as temporary President. Active in the formation of the new Mineral Institute are Thomas Warren, President, Ultra-Violet Products Co., V. D. Hill, Salem, Oregon, W. Scott Lewis, Hollywood, California, James W. Riley, Springfield, Ohio, Allan Branham, Lander, Wyoming, A. Joseph Alessi, Lombard, Illinois, Tex Tankersley, Miles, Texas, E. W. Martin, Ann Arbor, Michigan and others.

Those dealers who have not yet been approached, and who may be interested in the association, may obtain further details on writing Col. King.

SUSIE W. REESE
(Obituary Notice)

It is with much sorrow that we announce the death of Susie W. Reese, beloved wife of O. A. Reese, the well-known mineral collector of Colorado Springs, Colo. She died on July 12, 1947, in the Parkview Hospital, of a heart attack, after an illness of about a year.

Mrs. Reese was born in Marshall, Mo., in 1892. When only 6 years old, in 1898, she was taken to Cripple Creek, Colo., via covered wagon, and Colorado became her home state since then.

Mrs. Reese was much interested in crystallized minerals, and was a good helpmate to her husband on the many field trips during the long years he spent in building his very fine collection.

She is survived by her husband and four sons.

To Mr. Reese and his sons, the Rocks and Minerals Association extends its deepest sympathy.

Old Lead Mine

Has any reader of *Rocks and Minerals* knowledge of the location of a lead mine near Northampton, Mass., which was worked in the 1860's by Charles B. Parsons?. If so, are there any mine dumps worth investigating for mineral specimens?

San Diego Mineral Show
Oct. 18 and 19, 1947

The San Diego Mineralogical Society will hold a two day gem and mineral show, October 18 and 19, 1947, from 10:00 a.m. to 10:00 p.m., Saturday, October 18th and from 10:00 a.m. to 6:00 p.m., Sunday, October 19th. The exhibit will be held in the State Building (next to the Ford Building) in Balboa Park, San Diego, Calif.

There will be commercial displays and all dealers desiring to obtain space should contact the manager of displays, Norman E. Dawson, Rt. 2, Box 447, San Marcos, Calif.

MAURICE R. THOMPSON
(Dec. 5, 1888—June 2, 1947)

It is with much sorrow that we announce the death of Maurice R. Thompson on June 2, 1947. He had gone to the Johns Hopkins Hospital, in Baltimore, Md., for a check up and diagnosis and died suddenly.

Mr. Thompson was born in Lexington, Mass., Dec. 5, 1888, and was a graduate of Massachusetts Institute of Technology, 1911. He was a chemist with the Chile Exploration Co., 1912-1916, and was in the National Bureau of Standards, 1921-1941. From 1941 to the time of his death, he was with the Bureau of Mines at Norris, Tenn.

Mr. Thompson had, in my opinion, one of the notable private collections of minerals. He used to complain to me that he would call on the late John Grenzig intending to spend $5.00 and would leave $50.00. If he had a collecting specialty, it was the iron minerals. He was also an ardent collector of books on minerals.

He was a member of the Rocks and Minerals Association (from Feb. 1, 1928) and contributed several articles to *Rocks and Minerals*.

He is survived by his widow and a daughter, Mrs. Mary Arthur.

His collection has been shipped from Norris, Tenn., to his former home, 20 Williams Lane, Chevy Chase, Md., and within a few months it may be placed on sale.

J. W. McBurney

ROCKS and MINERALS

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KIBBLEHOUSE QUARRY AGAIN

BY CHARLES A. THOMAS

706 Church St., Royersford, Pa.

A recent blast of moderate proportions at this famous zeolite locality in Montgomery County, Pennsylvania, brought to light and thus to the eyes of eager collectors, the usual glistening dark brown stilbites, stilbites of paler hues to colorless and epidesmine in yellowish tan spheres as round and as large as filberts.

Natrolite of a peculiar gray color (blue when wet) and in thick veins associated with tan to dark stilbite, calcite, pyrite, epidote, and magnetite was much more in evidence than the preceding season. Acicular natrolite in this gray-blue color was examined by the writer under his microscope. The cause of the unusual color was found to be definitely caused by countless numbers of translucent grayish to yellowish-green to bluish-green spheres of chlorite arranged most interestingly on and among the glistening hairy crystals of the natrolite which in itself was either subtranslucent white or translucent colorless with a hint of mangano pink.

Microscopists who are acquainted with and are used to seeing the rather weathered looking natrolite at Kibblehouse Quarry pass it by. It is in this type of natrolite acicular masses that one is most apt to discover excellent chlorite spheres, some of which are neatly halved by fresh fractures, presenting to the micro hunter the interesting radiating structure of the common chlorite.

In a vein high up on the back wall and reached by climbing the huge pile of blasted rock, the writer found in loosely held together calcite and accompanied with much powdery lime and pyritic material, some very interesting separate and detached aggregates of epidesmine, chabazite, and beautiful pyrites encrusting and embedded in the epidesmine. Most of the pyrites are macroscopic cubes with sharply truncated edges and corners with all flat faces deeply and uniformally straied. Under the lens these pyrites of micro size are exceptionally sparkling, clean and beautifully imposed on the reddish-tan hued epidesmine. The calcite of this vein, though quite fragile, is nontheless in fine rhombic crystal form and dust the zeolites microscopically as well as macroscopically. The origin of the gray natrolite is near this vein.

Epidote is not in evidence in fine druses but excellent micro groups can be found in cavities associated with the usual calcite and magnetite. A few small specimens containing calcite, epidote and magnetite were placed in hydrochloric acid solution in an effort to obtain a few good groups of epidote crystals for micro study. The epidote was obtained but also a totally unsuspected item showed up. Beautiful micro crystals of byssolite in long translucent bluish-green aciculars radiated acutely and divergently in deep cavities in dark matrix. Microscopically they are not as finely drawn as the French Creek extracted byssolite, but they are much more firmly attached and of stouter form. Altogether they are a lovely study under a good light and a good lens.

Some mention should again be made concerning the fluorescent possibilities in the calcite to be found at Kibblehouse. During the Spring thaw a hundred pound mass of rock was loosened by the melting and refreezing of water somewhere near the rim of the right-hand corner of the quarry. Much powdery and moist material in the talus immediately below the

falling mass cushioned its fall and the entire calcite crystalled side of the mass was found facing down in the wet clayey material. The rock may have landed otherwise, turned over a few times and then came to rest as it was found. Not one of the dolomite-colored crystals was scratched in the fall. A few nicely sized sections of this rock were carefully placed in the writer's car. When this specimen was washed along with other interesting specimens of calcite, equally well crystallized and of similar color and form and finally tested under the Mineralight, the calcite from the talus debris reacted a most brilliant pink, comparable to the really pink Franklin calcite in color—but in one respect it differed; the Franklin material held its color and fluorescent output at a much greater distance.

Some pale grayish, perfect, dog-tooth calcites of fair translucency exhibited a pale blue fluorescence, the tips of the crystals showing a very pleasing afterglow when charged with the Mineralight. A limited amount of two-toned fluorescent vein crystalline calcite was found in the loot under the Mineralight. This material fluoresces not a brilliant pink and sometimes a light blue with a narrow pinched central layer showing a lemon reaction. In the blue with lemon reacting material the phosphorescence, though not spectacular, is an interesting dark blue and golden yellow. Many one to two inch thick white in daylight calcite vein sections exhibit this unique dark blue phosphorescence. This calcite is as finely grained as marble but it is not as compact.

For the micro hunter, groups of very minute dog-toothed spar crystals associated with water-clear minute stilbite and occasional heulandite in greenish to pearly white with perhaps some micro prehnite confounding the identification of one or the other and even a possible epidote crystal or a constellation of very black chlorite spheres may reward the persistant hunter. Natrolite in micro acicular crystals resembling the fuzzy adamantine velvet of the pectolite are found mostly in the pure white natrolite veins. These beautiful glistening hairs rarely are found with the parasitic chlorite spheres or the perfect pyrite cubes attached, but when the natrolite host is accompanied by these two minerals, they are as sharply and cleanly crystalled as the natrolite; which should be expected.

Manganonatrolite of rare color depth appeared after the recent blast. This pinkish to orange-red wavey vein material with its dark round spots ringed with white tan and pink resembles greatly some types of the Lakes region thomsonite. Where the natrolite veins are several inches thick, the central parts of the vein seems to be filled indefinitely with rather clear calcite. A thin section of this type should show beautifully formed long acicular natrolite crystals radiating and crossing gracefully through the transparent calcite.

Nearly all of the white natrolite absorbs light fluorescent machine oil very readily. A specimen thus prepared accidently or on purpose reacts a very pleasing blue under most ultra-violet wavelengths. A washing in sodium carbonate or strong soaps will enhance rather than eliminate this unnatural fluorescence.

No unusual minerals were found by the writer, but he did find a twenty pound mass of what appeared to be a rounded solid mass of natrolite, stilbite and calcite. This specimen upon being halved showed a large cavity lined with gray acicular natrolite covered with a blanket of yellowish-gray stilbite and calcite all of which were clean and sparkling. In a cavity within a cavity a diamond shaped calcite crystal carried a tail of seven or eight exact but smaller duplicates of the larger crystal forming a kite effect.

REFERENCES

Fluorescent minerals at Kibblehouse Quarry. by C. A. Thomas, *Rocks and Minerals,* Feb. 1946, p. 83.

A PROFITABLE INVESTMENT!

Editor R&M:

Enclosed is my renewal for another year. This is the most profitable $3.00 I have yet spent.

John Finlayson,
Rahway, N. J.

July 25, 1947

COMMON FORMS OF QUARTZ CRYSTALS AND THEIR ORIENTATION

By CHARLES PALACHE
Harvard University
Drawings by Howard T. Evans, Jr., Massachusetts Institute of Technology

The prism, *m* with six faces is almost always present and prominent on quartz crystals. Its faces are also commonly striated horizontally. One orientates the crystal by placing a prismatic face vertical. and directly fronting the observer. with the striations horizontal. All the prism faces will then be vertical. Most quartz crystals have but one termination, being attached to the matrix by the other which is therefore undeveloped. If both are present, either one may be taken as the top.

Rhombohedrons

The termination commonly consists of six faces, all of like slope, sitting directly over the prism faces. These six faces are normally triangles but the slightest inequality in rate of growth of like faces (which is almost universal) results in varying their outlines almost indefinitely; but their position, over the prism faces, and their slope of about 52 degrees to the vertical are invariable. Sometimes the six faces are of identical shape, size and lustre and might be regarded as composing an hexagonal pyramid, as in figure 1. More often there is some slight difference in lustre between adjacent faces or in the shape or character of the etch markings which are frequently present. When such a difference is found, it is the rule that three alternate faces will be alike, the other three alternate faces being also alike but of different quality. If the lower end of the crystal is developed, the faces corresponding to each set will be those parallel and opposite to them. Each of these sets

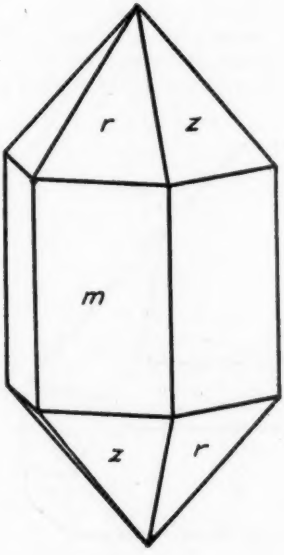


FIG. 1

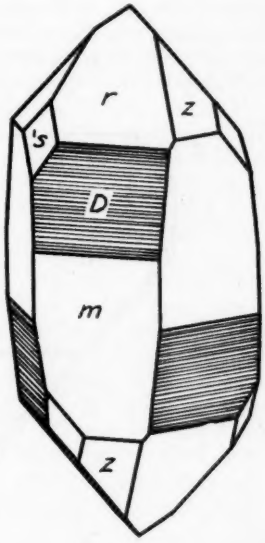


FIG. 4

of six faces, three above and three below, in parallel pairs, is regarded as an independent form, whether or not any difference can be perceived in their faces, and is called a rhombohedron. That rhombohedron which has one of its faces on the upper end fronting and sloping towards the observer is called positive (+) and in figures is lettered *r;* the other set has one of its upper faces sloping directly away from the observer on the back of the crystal and this is called negative (—) and is lettered *z*. The difference between *r* and *z* is one of position. It is evident that they will be interchanged if one turns the crystal 60 degrees about its vertical axis; that is, if one chooses the next prism face on either side as front face. *There is no certain way of determining by inspection on any given crystal of quartz which rhombohedron is r and which is z.* As a rule the brighter faces are taken as *r;* if one set is more largely developed than the other, it is generally taken as *r*. If one alone is present, it is also placed in the positive position.

If either one of these rhombohedrons is developed without the other or without the prism, it has the appearance of a slightly distorted cube, and when set up in normal position it is like a cube placed cornerwise or with a body-diagonal placed vertical. We sometimes find such a rhombohedron alone; or it may surmount a prism, giving it a cube-like summit with angles of about 86 or 94 degrees instead of 90 degrees.

The rhombohedrons *r* and *z* are known as the *unit forms* and determine for quartz the fundamental ratio between the horizontal and vertical crystal axes, expressed in the ratio $a : c = : 1.0999$.

However, a whole series of rhombohedrons, both plus and minus, may occur with slopes flatter or steeper than the unit. The only common ones have a very steep slope and approximate the position of the prism. They appear as faces, broad or narrow, lying between the prism and the unit rhombohedron; three of them slope upwards above three alternate prism faces and the other three slope downward. They may exist only as striations on the prism. Their symbols can only be determined by very exact measurement. One evidence of the presence of a steep rhombohedron such as, for example, D$(70\bar{7}1)$ or ϕ $(07\bar{7}1)$ is seen in the shape of the *s* face (described in the next section). Instead of having parallel sides it appears as a tapering wedge, as shown in figures 4 and 5.

The three forms *m, r,* and *z* are the only common forms on quartz. The endless variety of appearance of crystals is in large part due to the relative develop-

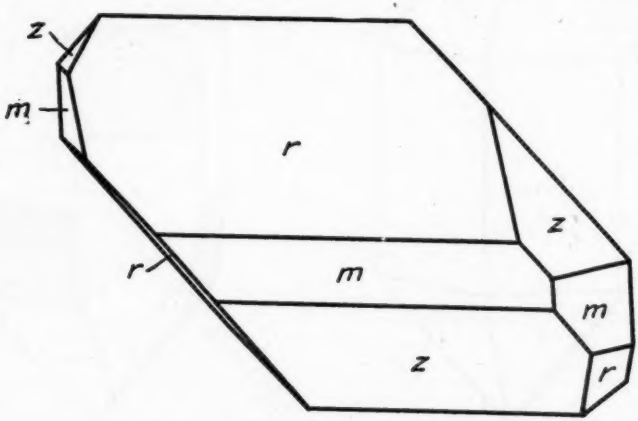


FIG. 2

ment of these forms, but it is also largely affected by unequal development of what are normally like faces due to inequalities of rate of growth and yielding what are termed distortions, as shown in figure 2. These are the rule, a crystal of perfectly ideal development being the rare exception. But the rule for orientation by a prism face as stated at the beginning enables one to interpret correctly the most extreme distortion.

Trigonal Pyramids

On rare crystals there are found faces lying over the corners of the prism instead of over its faces. They intersect a face of *r* and of *z* at equal angles and also, below, two faces of the prism. The shape of the face is commonly rhomboid, often called diamond- or lozenge-shaped, as shown in figure 3, and is characteristic, as is the very brilliant lustre. To these faces in drawings the letter *s'* is assigned. The symbol is $(11\bar{2}1)$. Ideally there should be six of these faces on a simple crystal, three above on alternate prism corners and three below on the same prism corners. If developed alone, they constitute a *trigonal pyramid* with horizontal edges and non-parallel pairs of faces. But no quartz crystal of this form has ever been described. Instead these faces are generally subordinate to the common forms in size and are rarely seen in full number. There is an identical trigonal pyramid possible, *'s* $(21\bar{1}1)$, which differs only in position, occupying the three alternate corners of the prism. These pyramids are distinguished as right and left trigonal pyramids respectively and have never been recognized as occurring together on a simple (untwinned) crystal. The occurrence of faces of the *s* form on two adjacent corners of a quartz crystal is thus one of the evidences that the crystal is twinned.

There is another trigonal pyramid, *f'* $(11\bar{2}2)$, found very rarely, which is less steep in slope and occurs as a symmetrical truncation of the edge between faces of *r* and *z*.

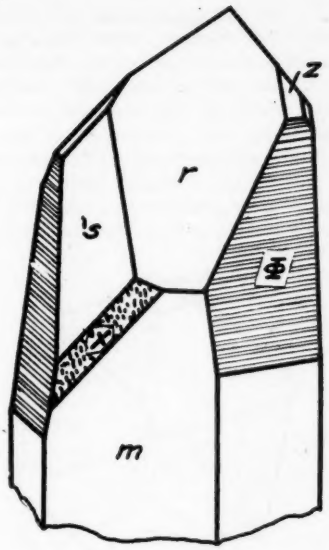


FIG. 5
Smoky Quartz
Faulkner's Quarry
Quincy, Mass.
(Collected by Daniel A. Bradley)

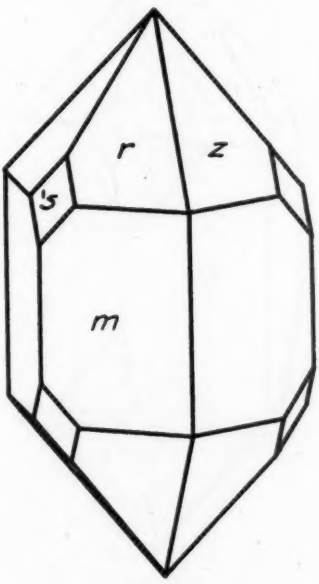
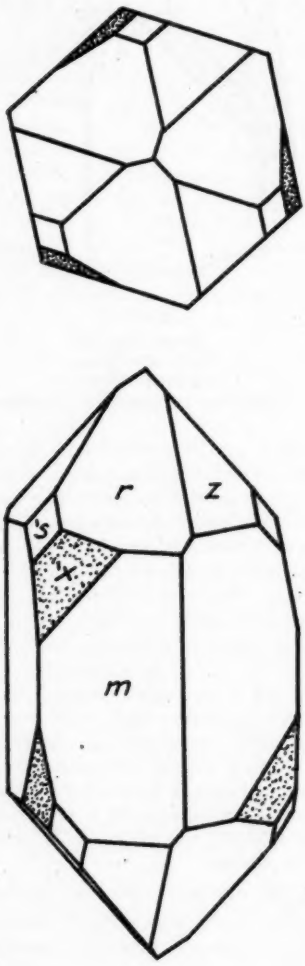


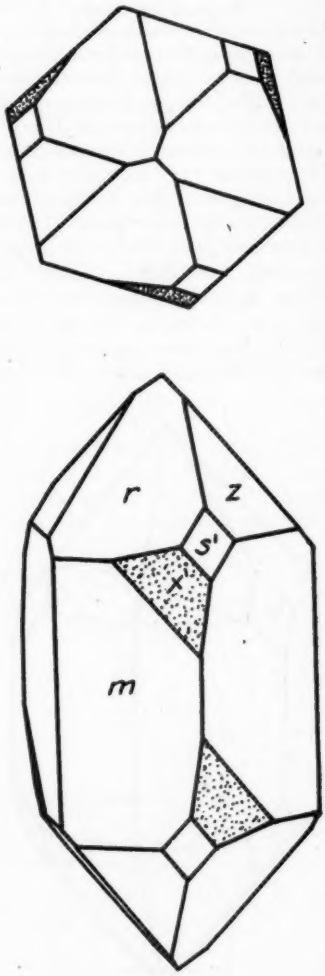
FIG. 3

Trapezohedrons

Still less common than the trigonal pyramid is the trapezohedron, which consists of six faces, three above and three below, which lie neither directly over the prism faces nor over its edges but in some intermediate position. The commonest mode of occurrence of this form is as a facet of trapezoidal outline lying between an *s* face and a prism. If complete, such a facet should be repeated on the same side of *s* on alternate corners of *m* above and on the same corners below but inclined towards the alternate prism faces. If developed alone, these faces make a sort of pyramid with non-parallel pairs of faces of trapezoidal shape and with unequal skew edges, whence its name. Four such forms, identical except for the peculiar distribution of their an-

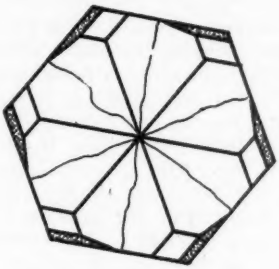


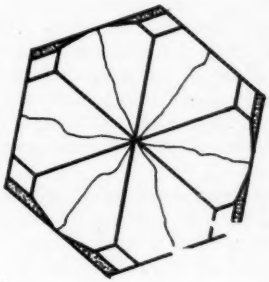
L +
FIG. 7



R +
FIG. 6

gles, can occur; two lie on either side of the *s'* faces and two on either side of the *'s* faces and these are distinguished in position as follows: If a trapezohedron face appears on the observer's right as he faces the oriented crystal and is beneath a positive rhombohedron, it is termed a positive right-handed trapezohedron, if on his left, it is a positive left-handed one. If however, they appear beneath a negative rhombohedron, they are respectively negative right-handed or negative left-handed trapezohedrons. The first two are illustrated in figures 6 and 7. It is worth while noting perhaps that the positive forms become negative if the choice of *r* is changed; but in no way can a right form be changed into a left form. Positive and negative trapezohedrons with identical axial relations can occur on the same crystal but their simultaneous occurrence on a crystal is a commonly accepted indication of twinning. In figure 6, *x'* is the plus right trapezohedron





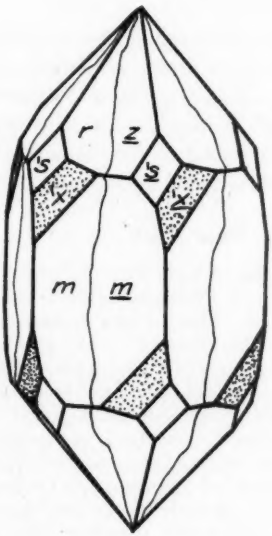


FIG. 8

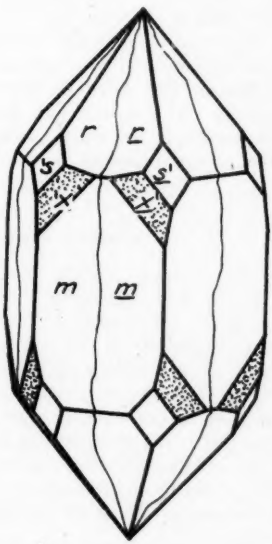


FIG. 9

(5161). In figure 7, 'x is the plus left trapezohedron ($61\bar{5}1$).

A vast number of these forms has been recorded on quartz but very few are at all common. These generally form a series of narrow facets between *s* and *m* with parallel edges of intersection and making a very low angle to the prism. Like the *s* faces they are rarely present in full number on a crystal; they commonly accompany *s* but also occur without it. As with *s*, the development of the same trapezohedron on adjacent corners of the prism is evidence of twinning. If the adjacent trapezohedrons are both right-handed or both left-handed, then the twinning is on the Dauphiné Law; if right-handed on one and left-handed on the other, the Brazil Law of twinning is present. These are illustrated in figures 8 and 9.

This elementary development of the occurrence of the forms of quartz assumes, of course, that there is such a thing as a *simple crystal* of that substance. In all probability all quartz crystals whatever their form are twinned to a greater or less extent and sometimes with enormous complexity, but this may be true without any external evidence of the fact. Most of the twinning of quartz is by interpenetration of the units involved and produces no reentrant angles or other obvious evidences of its presence. The optical and piezoelectric properties are the chief means of proving lack of homogeneity in the crystal.

But some of the effects of twinning can be determined by inspection. On prism faces twinning produces sutures more or less vertical, which interrupt the horizontal striations. Twinning on the Dauphiné Law, which is almost universal, has as one of its effects the bringing of *z* faces into the plane of the *r* faces and vice versa, as shown in figure 8. There are no re-entrants but the irregular twin boundary may often be traced by noting the difference of lustre of the two kinds of rhombohedral surfaces thus brought into the same plane. Sometimes the difference is obvious, especially when the crystal has been subjected to etching. But in a very strong light and at just the right angle of reflection the slightest inequalities of lustre may be detected and the boundary lines traced from face to face, giving some idea of the complex interpenetration of the two units of the twin. Brazil twinning does not produce this superposition of *r* and *z*. It is common, however, in the form of lamellar twinning and may be observed very often as a set of lamellae traversing the prism planes and parallel to a rhombohedron face, visible when the light is at the right angle of reflection.

Some of the more obvious evidences of twinning on these two laws have already been referred to. It is not intended to include in this statement anything like a full treatment of the complex subject of the twinning of quartz.

Marble Near Peekskill, New York

One of the earliest uses of diamond drills in mining and quarrying was the coring operation for marble at Cruger Station, near Peekskill, N. Y., in 1869, by a young lawyer named J. Wyman Jones, who had become interested in mining several years before when he accepted some of the shares of the St. Joseph Lead Company as compensation for legal services during a business depression. He eventually became president of that great mining concern.

No commercial deposits of marble was ever found at Peekskill. However,

one item of value to rock hunters is to be found at Peekskill. This is *Rocks and Minerals*. Don't forget to enter some subscriptions starting with the January, 1948, issue as Christmas presents for your friends. This should not only cause them to take greater interest in your collection, but should make them enthusiastic rockhounds too, and then you will have more company on location trips. Subscriptions for 12 monthly issues are now $3.00, and subscribers automatically become members of the Rocks and Minerals Association.

EIGHT RECENT GARNET FINDS

BY JOHN S. TRAINER

274 Madison Ave., New York, N. Y.

Since 1939, there have been eight discoveries of garnets reported which are notable or interesting for one reason or another. This is roughly the period in which the writer has specialized in garnets and in which our war efforts have disclosed fruitful new localities. Many more have been reported as was to be expected of a mineral as abundant as garnets but only eight are described here; if any readers of *Rocks and Minerals* can add to the list, the writer would like to hear from them.

Spessartite From Ceará, Brazil

The spessartite found in 1939 and reported in 1944 at Pocos dos Cavalos in the State of Ceará, in northeastern Brazil by W. D. Johnston, Jr., of the U. S. Foreign Economic Administration after its identification by Dr. F. H. Pough of the American Museum of Natural History, in a survey of strategic minerals, is of great interest because of its gem quality and its resemblance to the spessartite from Amelia, Virginia. The exploration of the Ceará locality was first for mica, then quartz and finally garnet. There is a fine group of specimens on display at the American Museum of Natural History.

The spessartite occurs in a pegmatitic schist. Figure 1 is a geological map of the area and Figure 2 is a map showing the mineralogical environment of the garnet. Figure 3 is from a photograph of the garnet workings. The garnet is in

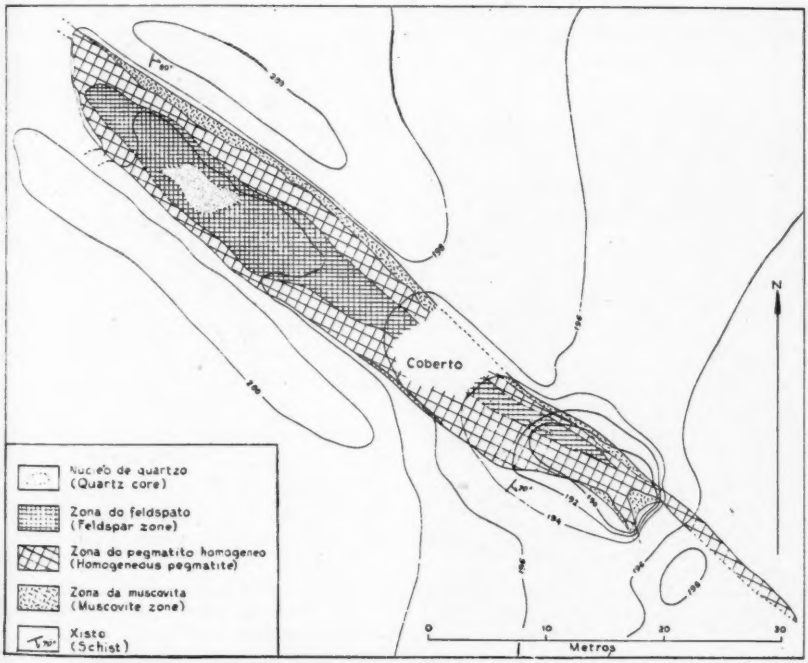


Figure 1—Geological map of the Ceará, Brazil, occurrence of spessartite garnet. Courtesy of W. D. Johnston, Jr.

the muscovite zone.

The associated minerals are quartz, cleavelandite, deep green tourmaline, light green apatite and aquamarine.

The color ranges from a deep rich red from which gems have been cut in Rio de Janeiro and New York City to a light orange red, this latter always filled with minute cracks. Figure 4 shows the etching patterns of the orange crystals which at some points follow the cracks; accessory forms are also shown.

The crystals are dodecahedrons in parallel grouping which is probably due to an interference intergrowth with apatite. Their present aspect is due to the natural solution of the greater part of the apatite leaving the garnet. This growth habit is not unusual. The writer has other specimens showing it though none is as perfect except those from Amelia, Virginia.

Figure 5 is from a photograph of specimens from both Ceará and Amelia, side by side, to show the striking resemblance in form and parallel grouping. Hitherto Amelia garnet has been considered unique but now it must allow Ceará to take a place alongside of it.

GROSSULARITE FROM NEAR BISHOP, INYO COUNTY, CALIFORNIA

The special feature of this garnet is its

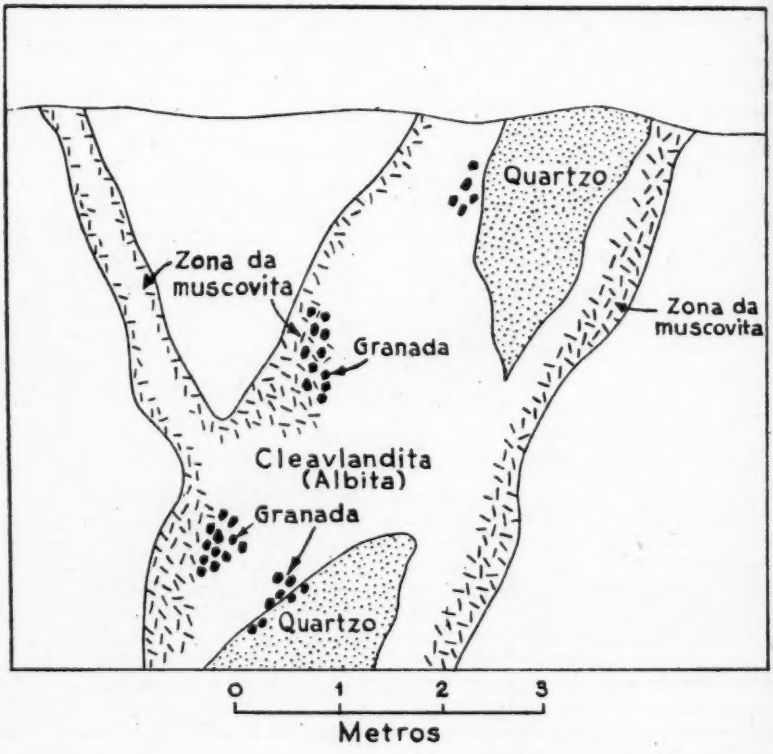


Figure 2—The mineralogical environment of spessartite garnet in Ceará, Brazil. Courtesy of W. D. Johnston, Jr.

crystal form. It is basically a dodecahedron showing tetrahexahedral faces and trapezohedral and hexoctahedral faces. The writer has examined about 125 crystals from one-eighth to a full inch in size. Nearly all show from one to four tetrahexahedral faces and the trapezohedral faces are equally prevalent. About six show faint hexoctahedral faces.

The writer has examined his 700 garnet specimens from 400 localities for tetrahexahedral faces and found only one showing them, a crystal from Broken Hill, N.S.W., Australia. Although they are not uncommon in Europe, they are certainly rare in the United States.

Mr. Charles S. Knowlton of Fullerton, California, first brought the Bishop garnet to the writer's attention in 1943, and has supplied ample material for study. The exact locality has not been given for reasons well-known to California collectors. The discovery was made by Walter ("Shorty") Stevens on a silver claim. The formation is a decomposed limestone and the best garnets are covered with calcite. Figure 6 shows a group from which the calcite has been removed. Other associated minerals are scheelite and vesuvianite.

RHODOLITE FROM GREENLAND

Rhodolite, one of the handsomest of American gems because of its rose red and purple color and brilliancy by reflected light, has hitherto been found only in North Carolina and therefore it is of great interest to learn that it has been found in Greenland.

Rhodolite is two parts of pyrope and one part of almandite.

In the November, 1945, *Rocks and Minerals*, Major W. B. S. Thomas, M.D., whose home town is Dover-Foxcroft, Maine, mentioned a purple garnet from Greenland which was given to him by Commander John Sinkankas, U.S.N. The writer wrote him for further information and in March, 1946, received a specimen from him which, when analyzed, proved to be rhodolite garnet. Dr. Thomas said that Commander Sinkankas came from Paterson, New Jersey, that he was an aviator in the navy, that he was one of the factors responsible for getting stranded aviators off the Greenland ice cap during the war and that he found the rhodolite. The writer wrote Commander Sinkankas at the Naval Operating Base at Kodiak, Alaska, and he replied under date of October 29th, 1946, as follows:

"I have your letter of October 21st in which you inquire about the garnets I found in Greenland. I am only too happy to relate the circumstances and to note that I have in some small way been instrumental in contributing something material to the knowledge of mineralogy. Dr. Thomas and I were on duty at the time at a naval station at Bluie West Eight. He was a zealous companion in the pursuit of minerals and trout.

"The rhodolite you refer to is half a pebble of muscovite schist (2½ x 1½ x 1½ inches) in which are embedded numbers of lilac-colored garnets of about the size of currants. The location where these

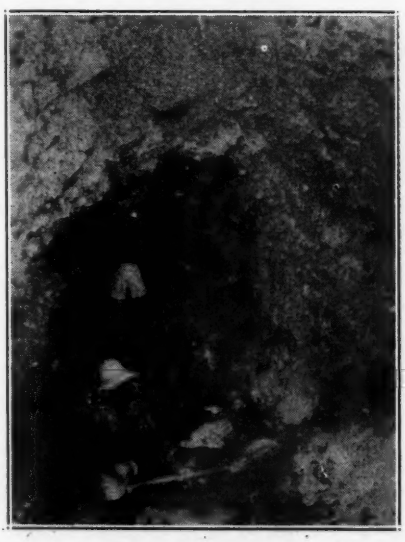


Figure 3—The spessartite garnet workings in Ceará, Brazil.

Photograph by W. D. Johnston, Jr.

garnets were found is at the extreme inland end of the Söndrestrom Fjord (South Stream Bay) on the west coast of Greenland (about 50 miles north of Ivigtut (the cryolite locality). The fjord is about 120 miles in length and departs toward the interior of Greenland on a course of about northeast. The southwestern extremity is just below the Arctic Circle while the northeast extremity is just above it. At the very end of the fjord is an army camp and nine miles further up the valley is an airfield; both operational.

"The garnets, almandite as well as rhodolite, were found about a half mile from the army camp on the same side of the fjord bearing towards the ocean. There were a large number of boulders here of glacial detritus since the whole area is marked very conspicuously with the signs of glacial action. The garnets therefore were not "in situ" but were in glacial drift, probably borne down the Watson River flowing into the fjord from some source above. The entire surrounding native rocks, as far as I could determine, were essentially metamorphic with numerous areas where igneous intrusions took place. The local rocks were schists with occasional dikes of pegmatite. Active and vigorous glaciation progresses in this area as in all of Greenland. Some glaciers are pouring forth a stream

Figure 4—Photomicrograph of spessartite garnet from Ceará, Brazil, showing parallel growth of dodecahedrons and etching patterns. The line of patterns is probably along a minute crack. Specimen in J. N. Trainer's collection. Photograph by Thane L. Bierwert. 15X.

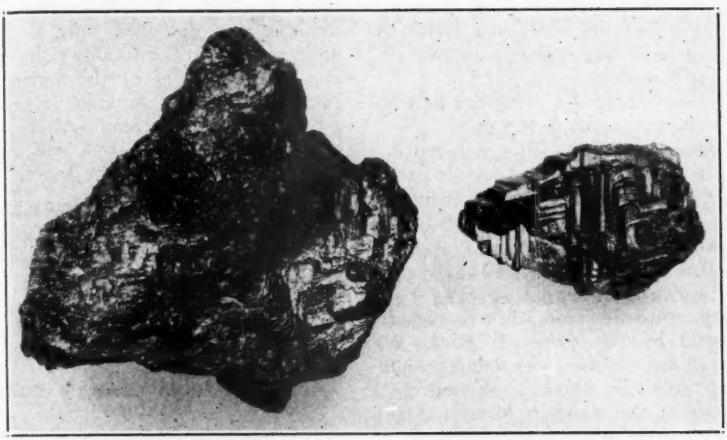


Figure 5—Spessartite garnet from Amelia, Va., to left and from Ceará, Brazil, to right showing parallel growth of dodecahedrons. Specimens in American Museum of Natural History. Photograph by Thane L. Bierwert.

of icebergs and others such as the one at the head of the Watson River are receding and filling the stream with "milk" and building up the mud flats".

The exact source of the rhodolite is, therefore, not known like the rhodolite from North Carolina. There is a job sometime for a hardy mineralogist following up the detritus and "pebbles" of mica schist and it might take him right up to the face of a glacier.

The rhodolite which "Sink" (as they call him) found is genuine and well authenticated. Officially its Refractive Index is 1.76 plus. The color is a delicate shade of pale rose red and purple and the matrix is mica schist like the rhodolite from North Carolina. It is directly a by-product of the war effort. In the October, 1946, *National Geographic Magazine* is a plate on page 498 showing the road cut along the cliff by the Navy from the head of the fjord to the airfield.

IRIDESCENT GARNET FROM NEVADA

In the *American Mineralogist* for May, 1943, Earl Ingerson and Julian D. Barksdale of the Geophysical Laboratory described an iridescent garnet from the Adelaide district near Golconda, Nevada, which was examined in thin sections. The date when the specimens they examined were found is not given but this is the first published report.

The writer sent Mr. Ingerson specimens from his collection including the highly iridescent "colophonite" from Willsboro, N. Y., and he reported as follows:

"Thank you for the fragments of iridescent garnet that you sent. I examined them as best I could under the binoculars and the iridescence appeared to be a surface phenomenon, except on the single crystal from Roumania, in which it appeared to be confined to an area of cracks. I could detect no zoning or striations like those in the Nevada garnets.

"I delayed answering your inquiry because I did not wish to report until I had a chance to see the specimens in thin section. I have now been able to get them sectioned and have just finished examining them. I find no twinning in any of them, and no birefringence. There are quite a few inclusions of pyroxene, calcite, and quartz, but their size and arrangement are such that they would not be expected to produce any iridescence. I could observe no iridescence at all in any of the thin sections, by reflected or tran-

smitted light, either with the naked eye or under the microscope. That is another indication that the iridescence shown by the fragments was a surface or near-surface phenomenon".

Evidently there is a difference between iridescence *on* a garnet and *in* it.

Ingerson and Barksdale concluded that the play of color in the Adelaide garnet is due to very fine polysynthetic twinning. Those who wish to know more about this rare occurrence are referred to *The American Mineralogist* of May, 1943.

UVAROVITE FROM ERITREA

The uvarovite from Eritrea, briefly described by the writer in *Rocks and Minerals* last October, was found presumably in 1939 by Mauricio Perrier, chief engineer of the Aziendo Mineria Africa Orientale and who gave specimens to Richard V. Gaines to bring to America. They are notable for the trapezohedral faces on the dodecahedrons like the uvarovite from Outokumpu, Finland and Val Malenco, Italy. Specimens from other localities are described only as simple dodecahedrons. The locality is in an arid area on the border of the Sudan. The garnets are from a chromite ledge along a river known as Torrenti Scaligne. They have been weathered out and can be found in quantities on the shore.

UVAROVITE FROM JACKSONVILLE, CALIFORNIA

This garnet, also described in *Rocks and Minerals* last October, is a recent find and is of the highest quality and beauty. Figure 7 is a sketch of the occurrence.

ANDRADITE FROM GRAHAM COUNTY, ARIZONA

This garnet is also a recent find. Its color is dark oily green and its crystal habit is the usual dodecahedron, occasionally curved and in paralled grouping.

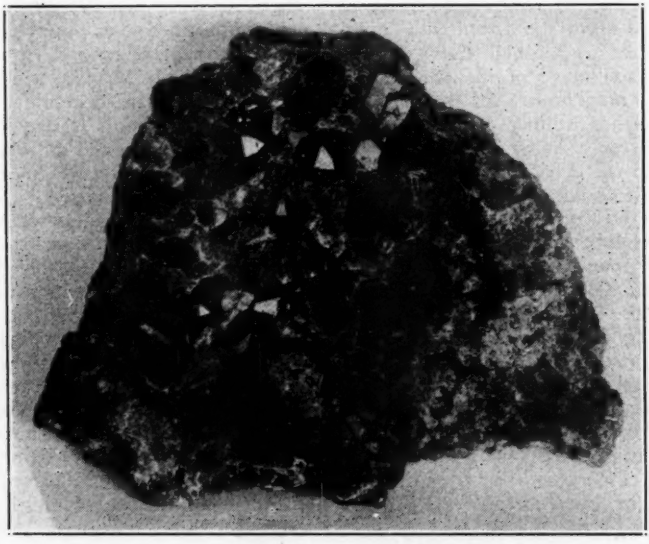


Figure 6—Grossularite from near Bishop, California, showing tetrahexahedral faces on the dodecahedron and also trapezohedral and hexoctahedral faces. Specimen in J. N. Trainer's collection. Photograph by Thane L. Bierwert.

Mr. Charles S. Knowlton of Fullerton, California, in a letter to the writer says:

"The first Graham County garnet that I ever saw was on October 19th, 1940, at a mineral show in Barstow, California. I purchased some from George Ashley who gets around considerably. He had quite a lot and told me that he had made the discovery.

"In July of 1942, our Mineral Society put on a small show and during it a man came in looking for me because he had heard that I was interested in garnets. He had with him many groups that closely resembled the Graham County garnets. He said that Ashley had to pack in and out three miles to the locality where he found his specimens but that on the other side of the mountain (Stanley Peak) and about three miles distant, he had found similar garnets within a short distance by car. He was trying to keep it secret but just could not. I suppose I have seen between five and ten tons of the Graham garnets, most of them greenish as were the early ones. But some of them are brown and very nearly black. I know some that look black in some lights but if examined with a lens they show a greenish brown. I have never seen any of the associated minerals or matrix so cannot answer you on that point".

The Graham County garnets have been widely distributed by dealers.

ZONED GARNETS AND PSEUDOMORPHS FROM GARNET HILL, CALAVERAS COUNTY, CALIFORNIA

These garnets were first found by Hatfield Goudey in 1940 and are a rich dark brown showing both trapezohedral and hexoctahedral faces on the dodecahedron and also zonal growth and pseudomorphs of quartz and epidote after garnet. They were described in *Rocks and Minerals* for August, 1945.

ACKNOWLEDGEMENTS

For assistance on this paper the writer is indebted to Richard V. Gaines, Hatfield Goudey, Earl Ingerson, William D. Johnston, Jr., Charles S. Knowlton, Frederich H. Pough, Commander John Sinkankas, U.S.N., Major W. B. S. Thomas, M.D., and Thane L. Bierwerth.

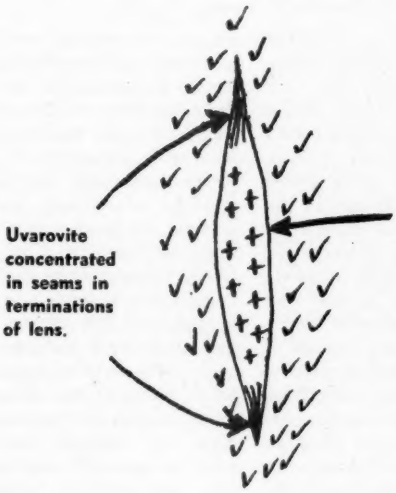

Uvarovite concentrated in seams in terminations of lens.
Chromite lens is about 20 x 3¾ feet. Little or no uvarovite in it. Surrounded by serpentine with disseminated uvarovite and chromite in seams.

Figure 7—Showing the uvarovite garnet occurrence near Jacksonville, California. From sketch by Hatfield Goudey.

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Zinc Mines in New York

Among interesting locations for mineral hunters are the dumps of the Edwards and Balmat zinc mines. The former is located at Edwards, St. Lawrence Co., N. Y., west of the Adirondacks or 15 miles east of the town of Gouverneur, while Balmat is 10 miles away at the other end of a mineralized belt. Both mines are operated on an extensive scale at the present time. The principal ore minerals are sphalerite, pyrite and galena, which occur in a gangue of calcite, dolomite, diopside, tremolite, talc and serpentine. Some of the zinc is magnetic due to oxidation of the pyrite. There also is garnet. Near by are old hematite and pyrite mines and marble quarries.

INDIANA GEODES

BY MARIE S. RILEY
R.F.D. No. 2, Springfield, Ohio

Our first introduction to Indiana Geodes came when one was found, where it had no business being, in the back yard of a niece in Christiansburg, Ohio. Being curious, she had broken it open and found it was full of crystals. In our reading we had found no mention of a geode locality in Ohio and certainly not in the vicinity of Christiansburg. A short time later she brought the stone to show us, and as she had said, it was a geode alright, filled with crystals, as she had described, but it was not native of Ohio, so we presumed someone had carried it there and losing interest, had thrown it away. We looked into the subject of geodes and found the nearest locality was in Brown County, Indiana, according to one of the magazines. Since that was not far from Springfield, we started planning a trip to the geode beds.

During the war there was a large army camp at Columbus, Indiana, the town to which one would ordinarily go, and knowing that everything in that vicinity would be taken over by the soldiers and their families, we decided to go to Bedford and work north out of there. Just naming a county as a locality can be pretty confusing, for counties cover a good bit of territory, but we had plenty of time, so decided to see what we could find. We went to Cincinnati, then took U. S. 50 west from there.

Southern Indiana is quite hilly and as is typical of hill country, the soil is thin and stony and making a living is not easy. We were through there in early September and one thing they do grow in abundance is watermelons. Have you eaten an Indiana watermelon, picked while it was still cool from the morning dew and with no further refrigeration? If you haven't, you've missed one of the real pleasures of this life. And I am one that thought watermelon had to be

ice cold to be good. We bought a large one from a farmer by the roadside for just a few cents, and at the first convenient place that we could pull out, we stopped to eat it. When we had eaten until there was room for no more, we decided a bit of exercise might help us finish it. We walked up the road and since we go around, always, with our eyes on the ground, looking for rocks, we began to notice some small round stones. My husband picked up one and broke it, and it was a geode. That was just west of North Vernon, Indiana, about ten miles. On this particular hill there was nothing but the small ones, about the size of a walnut, but we noticed that the hill was of yellow clay over sandstone and the geodes seemed to be weathering out of that. We got back in our car and drove on west, watching for clay banks. Every few miles we would stop and each time found a few. This was in Jackson and Lawrence counties. We had fooled away the greater part of the day, so decided to spend the night at Bedford and continue our hunting the next day.

One of Bedford's main industries is the quarrying of stone. This is a limestone, used for building. There are no geodes there. We had passed through the belt. Still remembering what we had read of Brown county and wanting to see the Brown County State Park, the next morning we took State Route 58 which runs in a northeasterly direction from Bedford, over to State 35 and then north to the Park.

I'm going to have to guess at the distance we went out of Bedford before we left the limestone and got back into the geode area, because we neglected to measure it on our speedometer, but think it was about ten miles. We crossed a creek and stopped to look in the creek banks. This time we really found geodes. The creek bed was covered with them. Some were stained a rusty red on the outside and when broken open, the crystals were stained the same color. Others were snow-white with white or clear crystals. They were from two to eight inches in diameter. We broke a few, then decided it was foolish to break all of them so picked up the ones that seemed the most perfect and left them to be broken open when we got home. There we made a mistake, for many of them were a solid crystalline mass and not at all attractive. It seems we always have to learn the hard way.

We were thrilled over finding so many and soon filled the boxes in our car. We took them back to Bedford where we sacked them in burlap bags and sent them home by express. We get more funny reactions out of express agents. They think we're more than a little balmy and must be handled with care or we may become violent. The people around Bedford and vicinity use the geodes around flower beds, to outline walks and even in concrete work, and can't see why anyone would pay express to ship them any place else.

Well, we hadn't yet reached Brown County State Park, so tried it again. We found it to be a beautiful forest park, with bridle paths and nature trails through it, but no geodes. We seemed to be north of the locality. As a matter of fact, we didn't find a single geode in Brown county. Maybe we didn't look in the right place. We came back State route 135 to U. S. 50. It was afternoon and threatening rain, so I'll not be able to locate exactly the next place we stopped, but it was by a gravel pit on a hillside where we again nearly filled our boxes. The threatened rain arrived while we were still hunting and we had to give up and start for home. We don't like driving in the rain, so when we reached North Vernon, we saw a very attractive motor court, one of the few in the east, and spent the night there, going on home the next day.

We had geodes, a lot of them, but I'm afraid the most of them are going to join the quartz pebbles from the beach at San Diego and the gray flint from Flint Ridge in our proposed rock garden and lily pool. Sometime we're going again, and this time, each geode will be broken to see that it is a nice specimen before lugging it home. We did find a few oddities in the lot brought home.

SERPENTINE OF HOBOKEN, N. J.

BY PETER ZODAC, Editor
Rocks and Minerals

One of the most interesting localities for serpentine in northeastern United States is Hoboken, N. J. Not only is serpentine well exposed in the city but quite a number of fine minerals have been found in the rock.

Although Hoboken is quite a prominent locality for serpentine, it is surprising how few collectors have visited the occurrence. Before the writer visited it, he approached some of the most prominent collectors in the metropolitan area of New York City for information on the locality but all in vain. Not one of them had ever visited the occurrence and so knew nothing about the locality. This was most discouraging. Furthermore since only two or three short articles on the occurrence seemed to have appeared during the past 75 years, this might indicate that the locality (like many other famous ones) may have been built over or otherwise obliterated.

One day a friend of the writer, Ernest Cassells, of Peekskill, N. Y., dropped in at the office of *Rocks and Minerals,* bringing with him his half-brother, Dan Carbone, of Weehawken, N. J. This was our first meeting with Dan and it was a most fortunate one, too. Although not a collector, he was, nevertheless, somewhat interested in minerals and wanted to know more about them. He knew serpentine and when we remarked casually about our interest in the Hoboken occurrence he almost floored us with his reply: "I live only two miles from Hoboken and if you visit me, someday, I will take you right to the locality as I know where it is."

Location

Hoboken is a city of about 60,000 pop. in northeastern New Jersey on the west bank of the Hudson River (the river here is about one mile wide with New York City on the east bank). It may also be described as located two miles north of Jersey City in the eastern part of Hudson County.

Geology

The writer has examined many geological reports but only three of them gave any notice to the serpentine of Hoboken and these, being rather brief, are reprinted in full. The first, printed in 1868, is as follows:[1]

"Hoboken is an island in the salt marshes. It is thickly covered with drift and boulders, but on its eastern side and along the bank of the river serpentine rock crops out. It rises to a height of forty or fifty feet above tide at Castle Point, and descends towards the north, where it is soon hidden from observation by superficial deposits of earth. Towards the south it also descends rapidly, so as to be covered with earth before it reaches the ferry. It extends on considerably further south, however, and it was found near the end of the Long Dock of the Erie R.R.,179 feet below the surface; and the same kind of rock is found on Staten Island, it is not unlikely that the two are parts of the same formation, which extends along the western border of the gneiss from one place to the other. Its exposed length, at Hoboken, is not more than 1/3 of a mile.

(A section NW-SE (p.324) shows red sandstone bordering the serpentine on the northwest and gneiss on the southeast. Borings and excavations for streets, buildings, etc. show that the outcrop of the serpentine is narrow, not more than 200 or 300 feet at the widest part).

"The strike of the rock is nearly parallel with the bank of the river, which is about S20°W. The most conspicuous divisions of the serpentine, and those which are presumed to be the marks of stratification, dip 75°E. It is of a dull yellowish-green color, opaque, of an earthy fracture, and soft enough to be easily cut with the knife. It contains numerous

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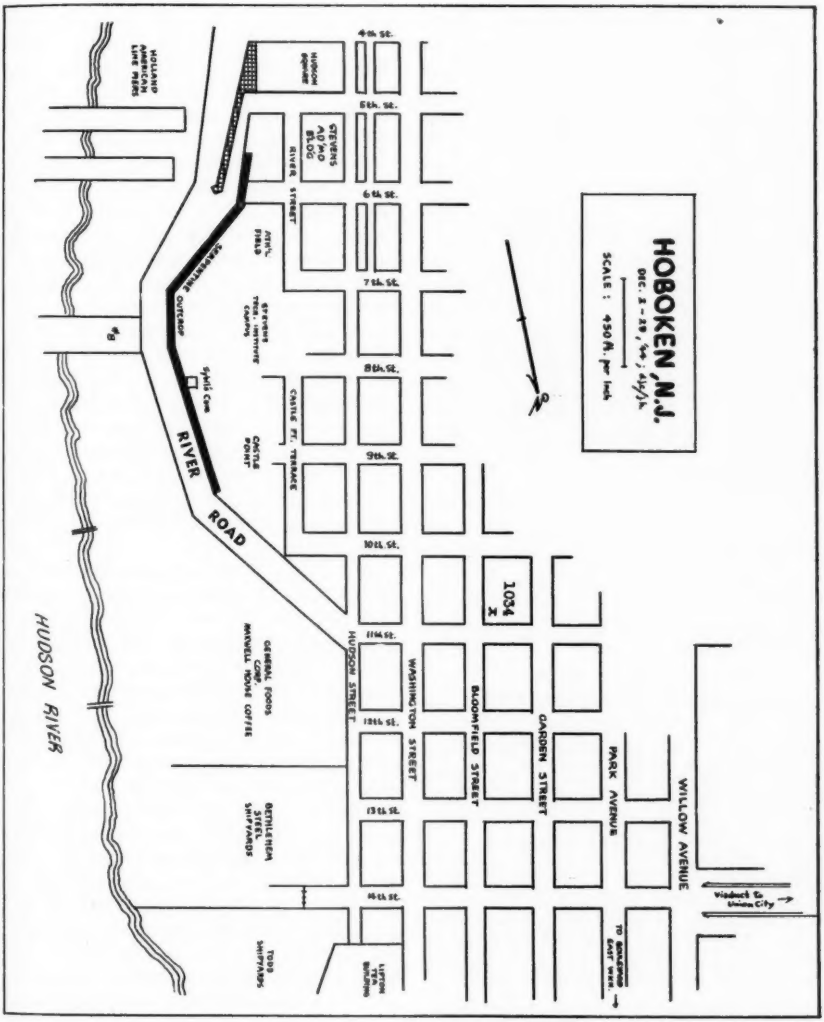
[1]Geology of New Jersey, George H. Cook, State Geologist, Newark, N. J., 868, pp. 325-326.

small crystals of chromic-iron (chromite). Besides the common serpentine, the variety called *marmolite* is found in great abundance, and the rare minerals *brucite* and *nemalite*. are found in small specimens. The grading and paving of streets and the erection of buildings has, however, spoiled Hoboken as a locality for rare minerals."

The second report is a follows:[2]



Map of portion of Hoboken showing serpentine occurrence and Sybil's Cave. Note: 1034 Bloomfield Street is location of Garden State Minerals.

"Hoboken Serpentine. There is no quarry in this stone and none is likely to be opened, except possibly for purposes of grading streets, excavations for foundations, etc. It forms the prominent hill that projects out into the Hudson River and is known as Stevens Point. It is a greenish-yellow massive serpentine containing occasional black grains of chromite. Where the stone has been exposed along the river front or in grading streets, joints are usually frequent, and some of these are filled with white talc and other light-colored magnesian minerals. The stone is secondary after a basic magnesian rock of igneous origin, which by hydration has been altered into its present condition. No other locality of this material is known in New Jersey, although the same stone occurs on Staten Island east of the trap rock, and similar serpentine, somewhat darker in color, is sometimes found in excavations on Manhatten Island.

"The stone is very well adapted for rock-face construction or for tool-dressing, and it has been used locally to some extent. Serpentine of the same character and colors that occurs through the southeastern counties of Pennsylvania and central Maryland has been used in the construction of many buildings in Philadelphia, Baltimore, and Washington, and the bright greenish-yellow color produces a rather strking effect."

The third report is as follows:[3]

"At Hoboken the serpentine forms the low oval prominence known as Castle Point, and resembles that found at Staten Island and the minerals are similar with possibly the addition of aragonite and chalcedony. Magnesite has been found quite abundantly (Plate No. 34). An account of the voyage of Hendrik Hudson to these shores in 1609, as described by one of his officers, Robert Juet, whose journal was preserved by Hakluyt, the English geographer, makes an interesting reference to the serpentine deposit at this locality by his entry in the journal for October 2, 1609, when he states that the "Half Moon" anchored off what is now known as Hoboken, close to "a cliff that looked the color of white green." Juet mentions "Manna-hata" as being on the side of the river where they were not anchored and it was the serpentine rock at which they "rode quietly all night." This no doubt is the first recorded reference to any mineral or mineral locality in the vicinity of New York City."

[2]Annual Report of the State Geologist for the year 1908. Trenton, N. J., 1909, pp.116-117.

[3]The Minerals of New York City and Its Environs, by James G. Manchester, New York, N. Y., 1931, pp.30-31.

Our visit to Hoboken

On Sun. Nov. 14, 1943, (a week or two after Dan's visit), a party of three left Peekskill, N. Y., heading for New Jersey. Those in the party was Joe de-Luca, Ernest Cassells, and the writer. We stopped in Weehawken to pick up Dan and then proceeded to Hoboken.

In Hoboken we stopped first at Stevens Tech. to see an instructor who might give us some information on the serpentine occurrence, but he could not be found. We continued down Hudson St., turned left on 5th St. (towards the river), and turned left again on the second street, River Road. We were now in the dock section where the great ocean liners have their piers.

We found River Road deserted and so had the whole street to ourselves. About 200 feet from 5th St. the serpentine began its outcrop (on the left side of the road) which extended for about 1800 feet as a vertical wall in places 25 feet or more high. The serpentine is a grayish-green rock and some nice specimens were collected from loose material which was quite plentiful. Almost opposite the 8th St. pier (the old Polish Gdynia Line pier) a small tunnel was seen in the serpentine wall. From the entrance we could see it was only a small excavation but it contained so much "junk and trash," with water dripping, down that we made no effort to go in—as we had on our good clothes. The excavation was about 25 feet in diameter and 10 feet high and in the center there appeared to be four pillars groupéd around a "trough." The entrance was in good condition but lots of loose serpentine, cans, bottles, etc. lie

around it. The tunnel, which is 50 feet off the road, is fenced off and may be on the property of Stevens Tech.

Sybil's Cave

The tunnel was a complete surprise to Dan, however, as he never saw nor even heard of it before, but he promised to look up its history and he did. In his letter dated Jan. 17, 1944, he wrote:

"The hole we saw on River Road was Sybil's Cave which was dug out of the serpentine rock many years ago. In the center of the cave is a spring (our trough, apparently) which was used by a nearby tavern years ago to cool its beer. This was back in the 1800's."

Another letter from Dan, dated April 24, 1944, brought this information:

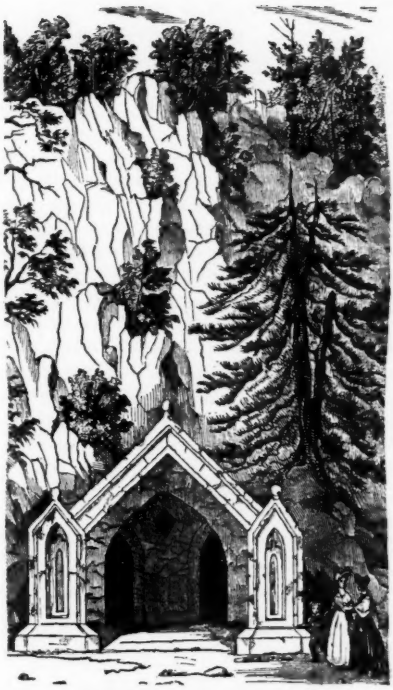
"In 1830, W. L. Stevens bought a tract of land which included almost all of what is now the city of Hoboken. He sold quite a bit of the land but held onto the section where now stand the numerous buildings of the Stevens Technical Institute, the grounds, and the many walks. On a high spot there, which is still known as Castle Point, Mr. Stevens built his mansion that overlooked the Hudson River and which still stands and now being used as one of the college buildings; this mansion is almost directly above Sybil's Cave, just a little to the north.

"Part of this land was known as Elysian Park—places of amusement were erected, refreshment stands and a tavern were also built along the walk facing the river, a short distance from the cave.

"The cave was designed by Mr. Stevens about 1835. It was excavated from solid rock (serpentine) to a depth of 30 feet and then bored for water. It resulted in a spring of pure sparkling water in the center of the cave—thousands of glasses of which were sold daily at a penny a glass to the people that visited the park.

"There doesn't seem to be much information on Sybil—perhaps he was the one who dug the cave."

Through a fortunate "accident", a print of Sybil's Cave was found among some old historical photos that had been left, temporarily, with Ernest Cassells.



Sybil's Cave, Hoboken, N. J.
(From an old print loaned by Mr. Ernest Cassells)

On the back of this print appears the following:

"We present our readers with a Cut, engraved from a sketch taken on the spot, of one of the most interesting features of the place. The Sybil's Cave as it is designated, is hewn from, and excavated through solid rock to the depth of thirty feet, and as our readers will perceive it is fashioned in the Gothic style, after a design of its accomplished proprietor. About five feet within the interior of the Cave, there is a spring of water slightly impregnated with magnesia, which is a pleasant and healing beverage; and many thousand glasses of it were sold at a trifling price, during the last summer".

The ornate entrance to the cave is no longer in evidence.

Minerals of Hoboken

Among the minerals found in the serpentine at Hoboken are:

Aragonite: white, fibrous, botryoidal crusts on serpentine.

Artinite: The first reported locality for artinite in the United States is the serpentine occurrence at Hoboken where the mineral has long been confused with hydromagnesite. Artinite is a hydrous magnesium carbonate occurring in minute prismatic crystals of monoclinic form; for years it was thought to be orthorhombic. Hydromagnesite is also a hydrous magnesium carbonate of monoclinic form and commonly found at Hoboken as amorphous crusts. The formula for artinite is $MgCO_3.Mg(OH)_2.3H_2O$. while for hydromagnesite it is $3MgCO_3.Mg(OH)_2.2H_2O$.[4]

Brucite: white radiating crusts and masses on serpentine.

Brucite (*Nemalite*): "Fibrous brucite."

Thin white fibrous veins in serpentine.

Chromite: small black grains are common in the serpentine. Small octahedrons, in serpentine, also occur.

Dolomite: good white crystals have been found.

Deweylite: small, creamy-white, lustrous masses or veins in serpentine were noted at Sybil's Cave.

Gold: with silver in quartz ven at Castle Point (Manchester).[5]

Hydromagnesite: grayish, earthy, clayey masses on serpentine. (See artinite).

Magnesite: snow-white earthy masses on serpentine; also cream or bluff colored botryoidal masses.

Serpentine: common serpentine, grayish-green to dark green, outcrops for about 1800 feet along the west edge of River Road.

Serpentine (*Marmolite*): smooth, lustrous, grayish-green masses with common serpentine.

Silver: with gold in quartz vein at Castle Point (Manchester).[6]

Talc: white, in joints of serpentine.

[4] Artinite from Luning, Nevada, by Cornelius S. Hurlbut, Jr. The *American Mineralogist*, July-August, 1946, pp.365-369. (His reference to Hoboken on page 369).

[5] & [6] Manchester, work cited, p.77.

GARNET AT ROXBURY AND W. REDDING, CONN.

BY LEO N. YEDLIN
Brooklyn, N. Y.

The finding of large loose garnet crystals lining the road at Roxbury[1] is so unusual and fascinating that it prompts an examination of the source of the material. And so Mr. and Mrs. E. Lawrence Sampter and I head north one bright day in June, 1947, leaving Manhattan in the morning—destination, the promised land.

We arrive at the village of Roxbury (1 mile due east but about 2 miles by road from the Roxbury railroad station, where the siderite mine is located), start from the village monument and proceed southerly along route 199 for 4 miles, where the tar road ends. About 100 yards further, along the dirt road that is a continuation, a bridge is crossed, and the car is parked at the junction of this road with another joining at an acute angle on the left. We follow this left road for something less than 100 yards, when a 75 foot high mound is seen on the right. This is the garnet dump. Thousands of almandite garnets are found here, loose and in schist, of all qualities from hard, sharp lustrous crystals to altered rounded pebbles. All are associated with staurolite, and the dominant form is that of the dodecahedron modified, in some cases, by the trapezohedron. A bushel of them is available for a couple of hours' pickings.

We ascend the trail immediately to the left of the dump, reach the top, cross a small meadow, and find the source of the material. This is a quarry about 50 yards long and 40 feet high, with smaller pits nearby. Mounds of excavated material surround the area, and all are studded with garnets, looking like nothing so

1 The New York Mineralogical Club outing to Roxbury, Conn., by Leo. N. Yedlin, *Rocks and Minerals*, July, 1947, pp. 628-629.

much as a plum pudding. Everywhere staurolite abounds, both in sharp single crystals and good twins. The garnets reach tremendous size—some one inch on an edge.

The schist matrix is curved and bent, penetrated by quartz veins, all studded with almandite. On exposed surfaces the garnets stand out from the weathered rock, so that it is almost impossible to find sitting room. Best eat lunch elsewhere.

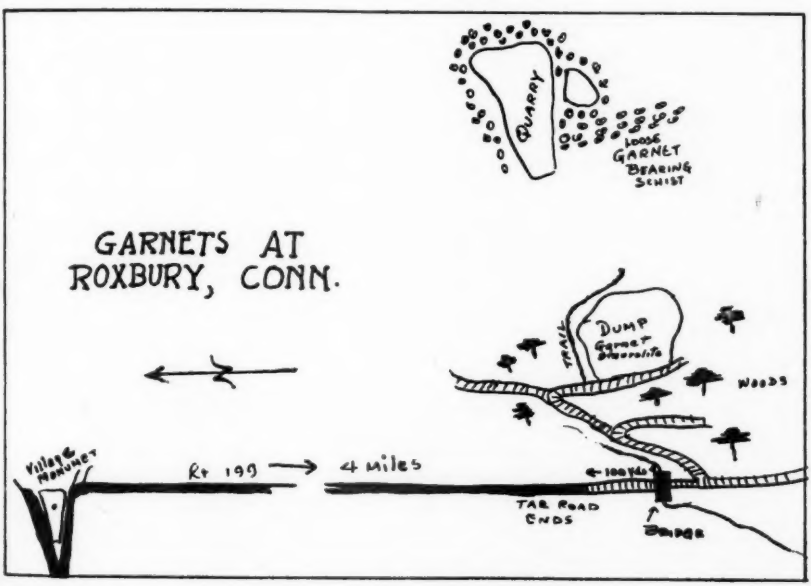
Editor's Note: On Sunday, August 10, 1941, the locality was visited by the Editor, accompanied by O. W. Bodelsen, of Mt. Kisco, N. Y., and we were charged 50c each to collect specimens by the then owner (?) of the property, Lyman Greene, whose home was 500 feet to right of the pits.

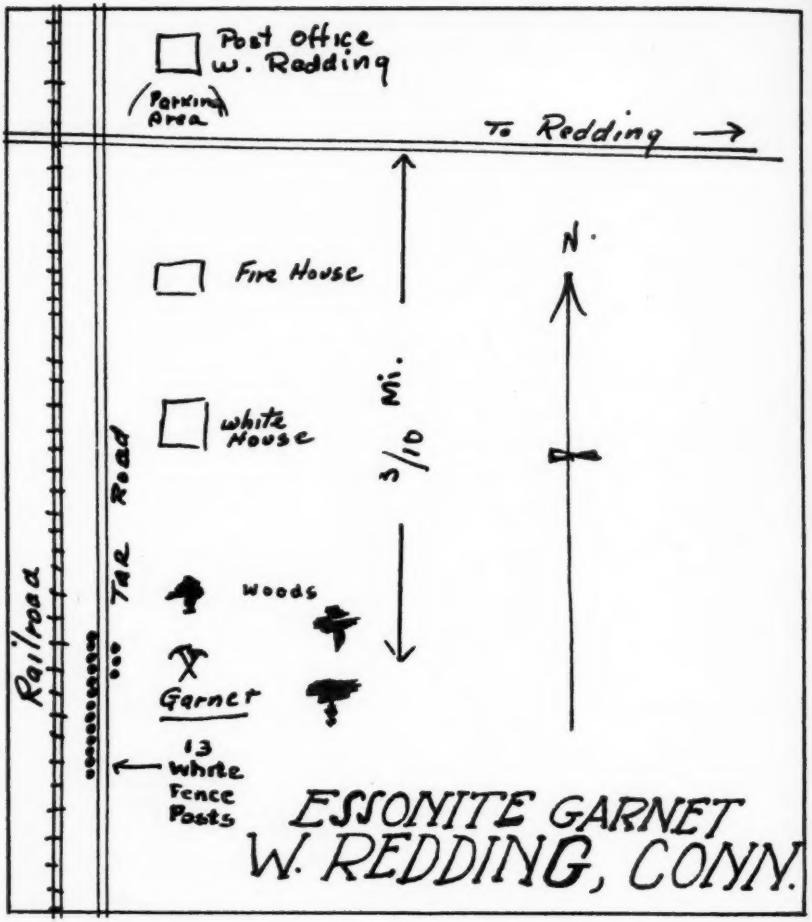
These old pits, abandoned for years, are also known as the Garnet Hill garnet mines and as the Roxbury Falls garnet mines.

West Redding Garnet Locality

The location of another garnet locality in Connecticut requires final determination. Specimens abound in collections variously labeled "Redding", "Redding Ridge", and "West Redding". Much inquiry leads to the post office at West Redding, where we receive directions. We proceed south, on the tar road adjoining the railroad tracks, passing a fire house and a dwelling, for three-tenths of a mile. On the right (West) of the road are 13 white fenceposts. On the left are 3. This is the locality. A ridge extends upward from the road to the east, composed almost entierly of solid salmon-colored massive essonite. The loose talus is all garnet. We break the material and find countless vugs lined with glittering crystals, from microscopic dodecahedrons and trapezohedrons to some almost one half inch on an edge. Pyroxene sometimes accompanies the garnet, and an occasional sharp crystal is found. Some of the essonite is in contact with quartz and calcite, and it is in this material that the garnet faces appear rounded and etched.

These are both wonderful collecting grounds. Collecting can be done within a few feet of your car.





Both of these localities are immediately available, and should be included in the itinerary of the collector in Connecticut.

Editor's Note: West Redding Post Office was formerly a railroad station and the essonite (grossularite) locality was then known as the Redding Station locality.

EVERYONE SHOULD HAVE A HOBBY

BY ZOLA BARNES

1440 Wright St., Los Angeles 15, Calif.

When I meet some one who says they have no hobby I sympathize with them. I believe every one enjoys a happier, fuller life by keeping busy doing something which relaxes their mind.

A friend of mine once showed me a box of funny looking worms, at least they looked like worms to me. Months later

I saw these same funny little worms, only this time they had developed into the most beautiful moths I had ever seen. "Just a hobby," she said. Hobbies include stamps, thmbles, guns, knives and many, many other articles of interest.

My hobby, like the proverbial "Jack of all trades" is the collecting of many items. I have composed a few poems, had one song published, and made a few mineral dolls, but my one best loved hobby is rocks and minerals. My interest in rocks and minerals began about ten years ago when Friend Husband and I were strolling along the beach gathering beautiful stones to build small walls around our flower beds.

Some of these stones were exceptionally beautiful and I suggested we try to polish some of them and construct a table. Friend Husband was favorably impressed with the idea. To execute the job was quite a headache, every one we asked knew as little about cutting stones as we did. Finally I went to the public library and brought home all the books I could find pertaining to stones. We found many things that were helpful after we understood them. However sanding meant sand paper to me and buffing was like so much Greek.

When we joined our first Mineralogical Society it was really appalling to learn just how ignorant we were about the wonderful beauty our good earth holds beneath her surface, beauty of formation and color, but dear, O dear, why must every beautiful mineral have the perplexity of "ite, mite and cite"! It made me dizzy trying to understand. We also learned that many of these beautiful "ites, mites and cites were not supposed to be cut and polished.

They were lovely and hard to get, but we were determine to learn about polishing.

We decided our beach stones wouldn't give us enough variation in our precious table, especially since a nice member of the club offered to classify our rocks and told us where to find more. Week-ends and subsequently our holidays were spent in the "field." We brought home anything that showed color, and would race out to our friend for identification. "JASPER or CHALCEDONY," WHAT, NO ITES OR CITES? Quite confusing.

Eventually we had accumulated enough rocks, and I do mean ROCKS, to build a house, it was time to start our table.

At first we broke our stones with a hammer, the smooth side was ground straight then polished by hand. Our arms developed considerable muscles before a friend "put us wise." Then we bought a motor, sander and grinder, finally a polisher, and we really went to town. About six months later we finished our table, although I didn't have many finger nails left we did have a piece of furniture that was, and still is, quite pretty. It consisted of lepidolite, malachite, petrified wood of various colors and a variety of jaspers and chalcedony.

Our mineral collection is not very spectacular, but I love every specimen. I buy a new one occasionaly, also trade for some, and this is where Friend Husband comes to my rescue. He works hours, even days, turning a lovely bowl or other ornamental object—then I trade his work for another mineral specimen.

The last ten years have brought many changes. We both know a little more about minerals and polishing material. Quite a change in our shop also. The 34 inch mud and the 14 inch diamond saws take the place of our first "baby," we have sanders, grinders and polishing buffs, and a lathe. The lathe is Friend Husband's dearest pal. He makes lovely lamps and bowls and has fashioned a complete dinner set of dishes, all from ROCK, chiefly of Death Valley Onyx, which, by the way, are usable and make a very attractive setting for a small dinner party.

Our experience with rocks and minerals including the cutting and polishing of various objects of ornamental character, over a period of ten years, leads to the ultimate conclusion that any hobby, if intelligently and energetically persued, will result in a longer, happier and fuller life. Yes every one NEEDS a hobby.

A UNIQUE MINERAL FIND IN NEW JERSEY

BY W. H. HAYES

Irvington, N. J.

On Easter Sunday, April 21st, 1946, Mr. Gene Vitali, of Paterson, and I went early to Prospect Park trap rock quarry, in Paterson, N. J., to investigate a heap of newly-blasted rock at the base of the basalt rock wall on the west side of the quarry. In the course of our digging we noticed some very fine loose sharp white needles which persisted in sticking into our fingers. They proved to be separate and individual needles of pectolite. So,—like good hunters, we followed up the indications of something bigger and found that the farther we dug the more plentiful the needles became. Finally we reached the pocket from which they came. Then, what a surprise! The pocket held a mass of pale green heulandite crystals, to which loose white crystals of pectolite, about three-fourths of an inch long, were rather insecurely attached at their ends. By loose crystals I mean that they were not cemented to each other, but were held in place by their largest ends on the heulandite, and radiated toward the same instead of away from it. Some of the pectolite needles are as fine as hairs and they all taper to points a sharp as fine steel needles. They are glassy and nearly transparent and very brittle, so brittle, in fact, that when they stick in the fingers, which they invariably do with any handling, the only way to rid the fingers of the pain they cause is to scrape the skin with a sharp knife and thus remove the invisible points.

The heulandite crystals measure about one-half inch lengthwise of the basal cleavage face, and three-eighths of an inch in width. They are intergrown, very

One of the very fine specimens of pectolite from Prospect Park Quarry, as described the author.

well crystallized, and the characteristic basal cleavage and pearly luster are prominent features. There is no parallelism in their grouping, so their faces may be seen from any direction. In accounting for the green color it can be laid to either a chlorite or copper impurity in the solution from which they crystallized, for both of these are found in this quarry, though sparingly.

If the pocket with its contents could have been seen before being shattered by the blast it would have been something wonderful to behold. When it was discovered by us, the heulandite was broken into many small groups of crystals, and each cluster of heulandite crystals had its complement of pectolite crystals on its reverse side. Only one reasonably large group was obtained and it is approximately 4 x 5 inches in size.

As far as we know this is the first occurrence of green heulandite, and moreover the aforesaid association of pectolite seems to be unique. Inquiries have failed to reveal any knowledge of any other locality which has had it, or any listing of this color and association.

I might add that under the ultra-violet light of the G-E lamp, the pectolite crystals fluoresce a light yellowish-brown color.

AGATE OCCURRENCE IN EGYPT

BY DR. C. H. BARLOW

277 E. 25th St., New York 10, N. Y.

Even in Egypt, these agate pebbles are rare. There are some few places where they are to be found in fair profusion such as Karnak temple at Luxor and around the Midinet Habu area. These agates are, however, quite palpably agates which have formed the rough material for the ancient pharonic stone cutters and were brought in from outside. It has even been stated that agate pebbles do not exist in Egypt but that they all come from outside.

One day while walking along the Railroad tracks in the Fayum oasis, I picked up a fairly large perfect agate pebble. Knowing that this agate could not have come from the geologic formation of the Fayum and that it must have been brought in with the heavy ballast of the railroad, I asked the station master where they got the heavy ballast for the Fayum. He replied that this material was brought in from El Marg, which is just outside of Cairo to the North.

When I returned to Cairo, I went to Marg and looked for agates there but found none. I then asked the station master at Marg where the heavy ballast came from that was shipped to the Fayum. He said that Abu Hamad was the source of this material. Abu Hamad is further down the Nile Delta almost at Ismailia.

Upon making a trip to Abu Hamad, I found long lines of camels bearing the heavy ballast in from the desert in large double baskets used for this purpose. They were dumping the ballast in large piles for shipment. I went over these piles and in them found quite a number of water worn pebbles.

Driving out into the desert to where the workmen were scooping up the gravel from large open pits, I found embedded in the sides of these pits agates which had been washed into place by streams which deposited them along with the other gravel.

It is evident that pebble agates (as opposed to the flake and chip variety) are indigenous to Egypt. Their rarity, however, may be judged by the fact that the Egyptian Geologic Survey had no knowledge of these agates until I left about half of my find with them. Thinking that such pebbles would certainly be of interest to collectors in America who wished to round out otherwise incomplete collections, I have brought 200 of the pebbles to this country. (Adv. in this issue).

BAHRAIN ISLAND — PERSIAN GULF

BY A. E. ALEXANDER, Director

Gem Trade Lab., Inc., 36 W. 47th St., New York 19, N. Y.

While on leave of absence from the Gem Trade Laboratory, Inc., it was my privilege to visit the pearl fishing waters which surround Bahrain Island, Persian Gulf. Mr. C. Dalrymple Belgrave, C.B.E., advisor to the Bahrain Government, kindly granted permission to visit Bahrain. He also made the necessary arrangements which enabled our party to reach the pearl fishing grounds. Mr. Belgrave assigned us a member of his secretarial staff—a young Arab who spoke excellent English and who acted as our interpreter.

The time set for the overnight trip turned out to be rough for water travel, but we left port regardless. During June, strong, steady winds blow continually off the Arabian desert. The relatively shallow Persian Gulf, like our own Lake Erie, is capable of being whipped into turbulence, with this difference—there is no rain. Several of us became violently seasick, as the small boat rolled and pitched for hours on end.

We anchored for the night in reef water, some twenty miles off shore. Here the water did not exceed five feet in depth. At dawn we moved out to the fisheries proper, about twenty miles beyond our point of anchorage. In the 1920's, when genuine pearls were the royalty of jewels and money was no object, as many as 600 native teak wood boats left the ports of Bahrain for the pearl fishing grounds. Missionaries living on the island a half century ago state that as many as 3500 boats were employed. This figure, I believe to be high, unless its represents the pearling fleet for the entire Persian Gulf. Each sailing dhow has a crew of from 40 to 50 men. On the basis of these figures, the number of men engaged in pearl fishing in years gone by, was considerable.

Today, the picture has changed. Fewer than 150 boats now leave port. Diving helmets and related under water paraphernalia, as in the past, are not used. The methods of diving are still the same as practiced in the Gulf for more than 2000 years of recorded time.

In flying from Basra to Bahrain, a good view of the limestane reefs of the Persian Gulf can be seen. It is from these reefs that the pearlers seek their fortune. In days gone by the pearl divers inherited the debts of their fathers. If these debts were large, the chances were that the son, or sons, would dive for a lifetime and never earn enough to pay off the oustanding debt. In recent years, if the sale of pearls proved good, the pearl diver might receive several hundred rupees for a season's work. On the other hand, if business was poor, the local pearl merchant might supply his crew with only enough food for himself and his family.

Today, the trend is toward higher wages, continually paid. The Bahrainian laborer whose status might be compared to that of a Chinese coolie at one time received 16 rupees a month, or less. With the discovery of oil on Bahrain, native help soon found employment with the oil company at a minimum wage rate of 60 rupees a month. More money is possible as skills, or a trade, are acquired.

Although many pearl divers, during the off season, are among the natives working in the refineries, when the Sheik announces the opening of the pearling season, in late Spring, hundreds of these workers leave to head for the fishing boats. It is the element of chance of sudden local fame and fortune that draws them back to tne old profession. Each diver feels that the *next* pearl oyster may be the one which will contain a rare gem, of great beauty, worth the proverbial King's Ransom!

On ariving at the fisheries, we watched the divers go through their routine. Large oars extend from the side of the dhow. These oars serve two purposes. One, to help steady the craft; two, to furnish a place to which the descending rope can be attached. To this rope is fastened a stone which may weigh up to

50 pounds. The diver stands on this stone. When he is ready to submerge he takes a deep breath, clamps a clothes-pin like device on his nose, pulls the slip knot which frees the rope and descends rapidly to the bottom. He carries with him a small net basket which is also fastened to a rope. As soon as he reaches bottom he slips off the rock and feverishly starts plucking as many pearl oyster shells as he can find in the immediate vicinity. While some divers descend to depths of 60 feet, the usual distance is more likely to be nearer 30. When ready to ascend he jerks the rope attached to the basket. This signals his helper who at once starts hauling the rope, the basket and the diver upwards. During the ascent the diver may assist himself by climbing hand over hand on the rope, if he is approaching the limit of endurance. Total elapsed time under water may be as much as two minutes. A minute and a half may be taken as average. These men are not physically powerful, but on the contrary are thin and wiry. Age does not appear to enter into the picture, for men 70 will be found diving with men who are in their 20's.

No attempt at conservation is made In fact, once at the source, the diver collects every pearl oyster within his reach. This results in immature shells being plucked as well as those considered full grown. A pearl oyster reaches maturity during its fourth year of life, though its life span may reach 12 or 15 years. The diver brings about a dozen shells to the surface at a time. Depending on weather conditions, depth of water at a given place, a diver in a single day can dive 30 times. If half the crew of a boat is engaged in diving, the number of pearl oysters brought to the surface in one working day can be considerable. Since hundreds of pearl-oysters are barren on opening, it necessitates obtaining tons of shell in order to supply the genuine pearl needs of the world. Only 35% of the genuine pearls of the Persian Gulf come from the waters around Bahrain Island. Kuwait, to the north; and the Trucial Coastal waters to the south of the Gulf's 600 mile length, supply the remainder of the crop.

There are fresh water springs in the Persian Gulf and the native divers insist that it is the presence of those fresh water springs that are instrumental in imparting the lovely cream and rose tints which characterize the genuine pearls of this region. The writer tasted this water and found it brackish. The artesian water obtained on the island of Bahrain is of the same quality and even when drilled, its taste is salty.

During the summer months, which constitute the pearling season, intense heat and high humidity are the order of the day. Rain is a rarity in this part of the world, and a flash storm becomes an historical event. During one pearling season, some 5 years ago, a sudden rain squall hit the pearl fleet at anchor, over 100 boats were destroyed and many divers lost their lives. Sturdy as these sailing dhows are, there is a limit to whatever these boats can take.

Contrary to general belief, large sharks do not inhabit the waters of the Persian Gulf. The natives informed me that a small fish up to three feet in length, and presumably resembling our own Barracuda, will occasionally attack a diver.

At the completion of the pearling season the merchants of Bahrain sell their pearls to the gem traders of Bombay a practice which has been engaged in for generations. Once in India, the pearls are drilled and graded for perfection and quality. Few Bahrainians have ever sold pearls directly to the dealers in New York. The trading, so far as the United States is concerned, always has been done between the merchants of Paris and London, and the dealers of New York.

This trip was under the sponsorship of Pearl Associates, Inc.; New York, N. Y.

Editor's Note: The Bahrain or Bahrein Islands, in the Persian Gulf, 20 miles off the eastern coast of Arabia, have been famous for centuries for their pearl fisheries. The above article, by Mr. Alexander, covers a recent visit made by him to the islands.

WORLD NEWS ON MINERAL OCCURRENCES

(Bureau of Mines **Mineral Trade Notes**, May 20, 1947)

1. METALS

ANTIMONY

Austria.—The antimony deposits at Schilsining, in Styria, produced 1,504 metric tons of ore in 1936. In 1937 and 1938, the mine was closed, but was reopened in 1939. Capacity of the mine is believed to be 750 tons of antimony annually. (Edward C. Lynch, Foreign Service Staff 14, Vienna.)

BAUXITE

Malaya.—Total output of bauxite in Malaya (Johore) during Japanese occupation was 395,450 long tons. No breakdown by years is available. (Consul General Paul R. Josselyn, Singapore.)

Surinam.—A short strike at the Paranam and Moengo mines of the Surinam Bauxite Co. and strikes of marine workers in the United States and Trinidad curtailed shipments of bauxite from Surinam in 1946. However, shipments totaled 171,127 tons over 1945.

COPPER

Austria.—The main copper deposits of Austria are at Mitterberg, Salzburg. During the period of the Austro-Hungarian monarchy, these deposits accounted for 80 percent of the copper output. In 1932, as a result of the general economic crisis, the mine was closed; it was reopened in 1937.

The Silberberg mine, with a possible production of 2,400 tons, and the Schwaz mine, with a possible production of 3,600 tons, are not operating. (Edward C. Lynch, Foreign Service Staff 14, Vienna.)

IRON ORE

Austria.—Austrian output of iron ore totaled 462,016 metric tons in 1946, compared with 323,189 in 1945 (most of which was produced before the Allied occupation in May) and 1,782,000 in 1937. Nine-tenths of the 1937 output came from the Erzberg deposits in Styria and virtually all of the remainder from the Huttenberg mine in Carinthia. Before the Anschluss in 1938, approximately 380,000 tons of iron ore was exported annually to neighboring countries. The Buchkogel mine, capable of producing 144 tons a year, the Waldenstein, 2,400 tons, Thon, 6,000 tons, and Breitenstein, 96 tons, are not operating. (Edward C. Lynch, Foreign Service Staff 14, Vienna.)

LEAD AND ZINC

Austria.—Development work undertaken after the Anschluss at the Bleiberg lead-zinc deposits increased production from 115,333 metric tons of ore in 1937 to 129,880 tons in 1944. No ore was mined after May 1945, and only 34,000 tons were produced in 1946. Enough lead is smelted at Bleiberg to meet normal annual requirements of 6,000 to 10,000 tons and to allow some export. Total production of lead in 1946 was 4,000 tons.

The Dirstentritt mine, capable of producing 18,000 tons of ore a year, and the St. Jodok mine, capable of producing 1,200 tons, are not operating. (Edward C. Lynch, Foreign Service Staff 14, Vienna.)

TIN

About two-thirds of the world's output of tin is normally mined in the Far East, about one-sixth in Bolivia, one-ninth in Africa, and the rest in the United Kingdom, Australia, Portugal, Argentina, and other countries.

2. INDUSTRIAL MINERALS

ASBESTOS

Spain.—The following information has been obtained regarding rumors of the discovery of extensive asbestos occurrences in Catalonia:

About 5 or 6 years ago two small asbestos mines were worked in La Gracia de Ares in the Province of Lerida, which adjoins Catalonia. The deposits were not extensive and accordingly were exploited only haphazardly. Only manual labor was employed in working the mines, and in the three years of operation only 60 metric tons of asbestos were recovered. The product was apparently of doubtful quality, the cost of production was exceedingly high, and the market limited. Therefore the mines have been abandoned. No new discoveries have been made.

PECORA ON BRAZIL

BY CHARLES A. BELZ

Secretary, Philadelphia Mineralogical Society

Another chapter to the slowly unfolding history of the Geologist in War was added in the course of an address to the Philadelphia Mineralogical Society by Dr. William T. Pecora of the U. S. Geological Survey. He described not only "The Pegmatites of Minas Gerais," the country, and the people, but discussed discreetly the general objectives of a mission of American technical personnel, and only inferentially revealed their successful attainment.

Well known to everyone is the painful fact that there are many extremely important minerals that cannot be supplied to the industries of this country from domestic sources in sufficient quantity even in normal times. To meet the frenzied demands of war production, those foreign sources that had not already fallen into the hands of the enemy, were called upon to produce not only to their full rated capacity, but to a tremendously increased rate of production which was finally achieved largely through the assistance of American men of Science and Technology.

Dr. Pecora's particular assignment was to help increase the production of Mica, Beryl, and Tantalite from the Brazilian sources in the Minas Gerais area. While these minerals were already being shipped in great quantities, it was the task of our geologists to find and map new deposits, to re-study old deposits, to save valuable shipping space by eliminating at the source unusuable low grade material to expedite the shipment of only such material that had definite industrial value, and to estimate unmined reserves of these minerals.

Despite the fact that mineral deposits (excepting oil) in this area are as rich, or richer than those in California, South Dakota, North Carolina and other states, the great obstacle to production is that of transportation from the inland mining localities to shipping points on the coast. The topography is not too difficult, resembling that of Pennsylvania, but railroad and trucking facilities were totally inadequate.

The pegmatite dikes in general crop out on the slopes of the hills, occur in groups, and are severely weathered. In the northern deposits, the harder pegmatites require the use of compressors and jack-hammers,—in the south, the pegmatite material was so soft that minerals could be worked out with nothing more than pick and shovel. There is much erosion due to the abundant warm rainful. Since the advent of American production men, stripping of this topsoil was done with bull-dozers, accomplishing more in one week than fifty men previously could do in three months by following the old hand methods.

The country schist, gneiss, and quartzite, in its folding and warping, opened seams into which the pegmatite fluids were intruded, and which, on solidification, resulted in sheets and dikes up to 100 feet thick, and extending several hundred yards in each direction. They are by no means consistently homogenous in texture, but in many of them there is pronounced zoning. Certain zones contain concentrations of characteristic groups of minerals. Mica may be on the face of the hanging wall, Beryl in the central quartz zone,—there will be a definite zone containing the Tantalite. It was the function of the geologists in the field to map these zones, and plan the mining procedure so that no effort was wasted in working a zone in which the minerals sought would not be found. By such advance mapping and a well-planned operational procedure, production of specific minerals reached a maximum, and after a final culling of low grade material, shipments were loaded onto planes and flown away.

Field sorting necessarily had to be rapid, and in reply to a question from the floor, Dr. Pecora explained, by taking Tantalite and Columbite as an example, that their difference in luster was so distinctive that it alone could be used

reliably for the separation of high grade from low grade material. While their difference in specific gravity was noticeable,—Columbite 5.5, Tantalite 7.5—and fracture also indicative, being similar to that of Cannel Coal for Columbite, and hackly for Tantalite; the most pronounced difference was in the luster, being similar to Anthracite Coal for the Columbite, but showing a decided metallic luster for the Tantalite. Streak was also different in each variety.

Dr. Pecora spoke with regret, sympathetically shared by his audience, of the local disregard for the specimen value of the minerals that came to hand. The native miners appraised a piece solely for its probable commercial value,—seemed to be utterly oblivious to any possible importance as a specimen, and undoubtedly as a result of this ignorance, many magnificent museum pieces have been destroyed or lost.

The status of the Brazilian miner, virtually enslaved by the obvious restrictions of a 40 to 60 cents a day wage-scale, aggravated by a mineral-deficient diet due to leached out agricultural soils, and living under the constant threat of malnutrition, malaria, and other illnesses, is in striking contrast to the great mineral wealth of the country. During the last ten years, despite inefficient pegmatite mining methods, and lack of transportation, shipments of Mica, Beryl, Tantalite, Kaolin, and Gem stones amounted to $25,000,000. There are, to mention only two others, enormous deposits of Iron and Manganese. To reap the full benefits of all this mineral wealth will first of all require a transition from the colonial, or plantation way of life, to a modern industrial economy. The Brazilian of vision is not unaware of this,—he sees in the "Colossus of the North" an example of the wealth and the power that can be derived, both individually and nationally, from sources other than the mere ownership of land and slave labor. Overcoming a traditional mistrust, forward looking Brazil looks to the United States for help and guidance through this metamorphosis. The character of the men representing this country, working side by side with the Brazilian experts in a superhuman joint effort, in no small way helped to bring about this change in attitude. Should this cordiality develop into a firm and lasting friendship, the presence of our missions, in this unforseen and unplanned effect, may in the final accounting prove to have been of far greater value than the accomplishment of the primary objective, which Dr. Pecora described as "getting more stuff out of the ground faster".

TRIP TO A MARYLAND GOLD MINE

BY PETER ZODAC, Editor

Rocks and Minerals

One of the interesting localities around Washington, D. C., is the old Maryland gold mine near Great Falls, Maryland. Great Fall is about 10 miles northwest of Washington in the southern part of Montgomery County.

The writer made two trips to the locality. The first one was on Thursday, August 26, 1939, when the locality was visited with Dr. J. R. Evers, of Tarrytown, N. Y. We arrived late in the day so that only a few minutes were available to collect specimens. There was a small dump, near the shaft, consisting mainly of massive milky quartz with small masses of pyrite.

The mine was in operation and its 2-compartment vertical shaft was down 210 feet, so we were informed by one of the workers who took us through the mill. We found nothing of interest in the dump but the worker told us that the manager (not present) had some nice specimens containing native gold.

The second visit to the locality was made by the writer on Sunday, June 24, 1945, acompanied by three collectors, Messrs. C. R. Robinson, French Morgan,

and C. M. Davis, all of Washington, D. C. (Mr. Robinson now resides in Puyallup, Wash.) We left Washington about 10:00 a.m., heading for Great Falls. On the way we went through the city's famous Rock Creek Park, past the American University, and over Cabin John bridge (a long narrow red sandstone bridge over Cabin John Branch). We did not go directly to the mine shaft, as the mine is now abandoned and the property posted, but to a nearby dump where on the previous Sunday, June 17th, native gold had been found by the following members of the Mineralogical Society of the District of Columbia: Miss Betty Hattis (a good small specimen); Mr. James Benn (a good specimen); and Mr. Stephen Olop (several small specimens).

The dump was small and it consisted chiefly of massive milky quartz (stained brown by limonite or sometimes dark red by hematite). Next to quartz the most common mineral seen was pyrite which was quite common—in small masses and little cubes in the quartz. Small dark brown metallic masses of pyrrhotite and brassy yellow mases of chalcopyrite, both in quartz, were also noted as well as some small cleavable masses of galena in quartz and a few greenish malachite stains on quartz.

It was the writer's belief that native gold would be found with the pyrite and though we worked for several hours, breaking up hundreds of pounds of the quartz, not even a speck of gold could be seen. Just as we were about to quit, almost exhausted from the work and with eyes tired from the examination of hundreds of specimens (often in poor light due to the shade from trees which were plentiful) the writer happened to pick up a chunk of quartz, weighing about 10 lbs., and gave it a crack with his hammer. The specimen broke nicely in two and—Eureka! We found it! Nice small yellow masses of native gold were present in both pieces!

This find created considerable interest and we postponed our departure and made an extra effort to find more specimens. After trimming both specimens to hand-size, one was given to Mr. Robinson and the other retained by the writer. Examination of both specimens surprised the writer, however, as the gold was found associated with galena, and very intimately. We had run across many specimens of galena but they were all discarded, with practically no examination, in the belief that it was pyrite we had to examine. After the writer's find, search was made for galena which then seemed to become scarce, but within 20 or 30 minutes two more specimens of native gold (with galena in quartz) were found by the writer—the first one was given to Mr. Morgan and the other to Mt. Davis. These were not as good as those first found, but they were interesting specimens, nevertheless. These four specimens were the only ones found by the group.

Just before the first find was made, Mr. Robinson began panning in a nearby brook some of the 'dirt" from the dump in the hope he would find some gold grains. In the very first pan he did make a find, and a most interesting one,—no it was not gold, nor even a rare crystal —but a good cut and polished bluish opal cabochon. We know that common opal occurs in Maryland but Mexican opal occurs only in Mexico and this, we believe, is what Mr. Robinson found. We got a big kick out of this find and it was retold many times at the meetings of the Mineralogical Society. Further panning revealed no more opals nor any other interesting find.

The Potomac River was only a few hundred feet away, to our left (southwest) and after collecting activities were over we walked down to view it, crossing the old abandoned Chesapeake and Ohio Canal (now dry) which parallels the river. The river is not very wide—only a few hundred feet—but it is very rocky and the water was very dirty. We remained only a few minutes by the river then retracing our steps up hill, we got into the car and headed back for Washington.

REFERENCE

Gold Mining, Past and Present, Near Washington, D. C. By Titus Ulke, *Rocks and Minerals*, Oct. 1939, pp. 299-305.

THE AMATEUR LAPIDARY

CINDERELLA STONE

BY LUCILLE SANGER

1922 Newport Ave., Chicago 13, Ill.

One of the most prized cutting materials of the amateur lapidary is the Montana moss agate. However, this stone has no value to the majority of cutters unless it contains some moss, but the most sought after pieces are the ones with the pictures in them. The great mistake lies in overlooking the clear agates which are usually discarded. These range in color from a milky or smoky translucence through deep carnelian and honey to a water clearness. (We hope to devote an article in the near future to special treatment of this latter type.) When cut, these stones often show an exquisite opalescence and are in a class by themselves for beauty. A few people mistake them for iris but they lack the dazzling iridescence of the rainbow and are therefore not iris. However, any cutter is justified in using them for their particular kind of splendor. A perfect and brilliant surface can be easily attained by the most inexperienced and this stone rarely pits. Its hardness makes it a fine stone for the beginner to set into a piece of jewelry because the chances of breaking it are fewer than they are for a softer stone.

Very few men nowadays wear tie pins. They prefer to hide any gem they wear on a tie by hiding it under a coat on a tie clip. This grievous situation should be corrected immediately. A beautifully cut stone set simply and attractively in a tie pin is a piece of jewelry any man should be proud to wear.

Our model, a tie pin, was set with a clear Montana agate of a smoky gray appearance. It was cut into a high rounded oval cabochon about five-eighths of an inch long from a slab which was at least three-eighths of an inch thick. See Figure 1. Do not polish the bottom.

Lay the stone on a piece of 22 gauge sterling. Mark around it with a pencil. Saw or cut with snips about a sixteenth of an inch on the outside of the pencil mark.

Fit a bezel of 26 gauge sterling to the

Figure 1

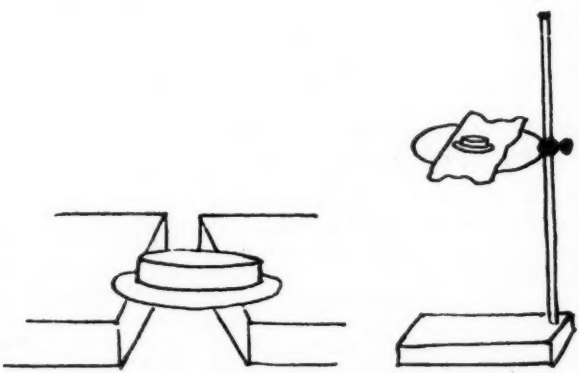


Figure 2

stone. See that the joints are a perfect fit and bend the bezel until they stay together without wiring. Place the lower half of the bezel in a small can of carborundum grit or fine beach sand, with the joint on top. Flux the joint well. Use very hard solder for this operation to keep the joint from melting in subsequent heatings. File the bottom of the bezel even and smooth on a coarse file, so that it fits the 2 gauge with no light showing around the joint. See that the bezel is centered on the sheet sterling, flux and apply heat gently to dry it. Flux again and place small pieces of solder on the inside of the bezel at the joint.

Place the bezel, bridge-like, between two inch-high asbestos blocks and apply the heat underneath. This heats the heavier silver without melting the lighter bezel. Or, if there is a stand, fold a piece of copper screen wire or place a piece of grill over it and place the bezel on it. Apply the heat from underneath. See Figure 2.

When the soldering is finished, place the bezel in warm pickle for a few minutes to clean it. Remove, wash thoroughly in clear water. File the edge parallel with the bezel.

Fit a piece of beaded wire, half-round, to the bezel. It should lie flat on the little platform around the bezel. It is advisable (and easier) to fit and solder one side at a time. The wire is soldered in the same manner as the bezel, on the stand or between the asbestos platform. When one side is soldered, dip in water and fit the other side and solder it.

Cut a piece of either sterling or nickel wire—the later is better if it is possible to get it—about three and a half inches long. File one end of this so that it is straight across. This is the end to be soldered to the bezel. Scratch a small clean place on the bottom of the bezel cup in the exact center. Flux this place and lay a small square of the easy flow solder on it. Gradually apply the heat until the flux is dry and the solder is stuck in place. Hold the wire in the left hand with a pair of pliers near the top end. Hold the end to be soldered about two inches above the spot where it is to be soldered. The pliers help to keep the wire from melting, but the wire must be kept warm enough so that it can be quickly soldered when the heat is right. If the bezel cup is heated too, the other joints are likely to melt.

Place the pin in warm pickle for about fifteen or twenty minutes. Remove and wash thoroughly in cold water. If ammonia is available, put a few drops in the rinse water to neutralize any acid which might be lodged around the beaded wire If the bezel needs filing around the beaded wire, now is the time to do it. File the end of the wire pin to a sharp point. Polish the point with fine emery polishing paper. Polish the inside of the bezel so that it is as bright as possible. This can be done with the emery paper or with electro silicon or other silver polish. Finish with the emery paper.

Put the stone into the bezel to see how it fits. If the bezel is a little too tight, lay it on its side and stretch it by rubbing the burnisher back and forth on the inside of it. Use pressure to do this. However, if the stone goes in but is too tight a fit to enable it to come out, attach a dopstick to the top of it and lift it out. If the bezel is too high, place the piece, bezel down, on the coarse file and take off what is necessary. If the bezel is the right height just take off enough to make a smooth and even edge. Set the stone.

Great care must be taken in buffing the piece so that the pin is not bent. Polish the mounting first. Polish the wire pin by laying it, full length, on a smooth piece of wood, with the bezel pressed against the edge of the wood and the entire length of th pin extends down the wood block. This enables the wire to be pressed hard against the muslin buff and given a hard bright polish. The bezel should have the same kind of finish as a bright polish enhances the beauty of the stone, which when mounted in the bright bezel will be seen to be a lovely moonstone agate. (Why not make a ring to match?)

(*Continued on page 839*)

A FAST MUD SAW

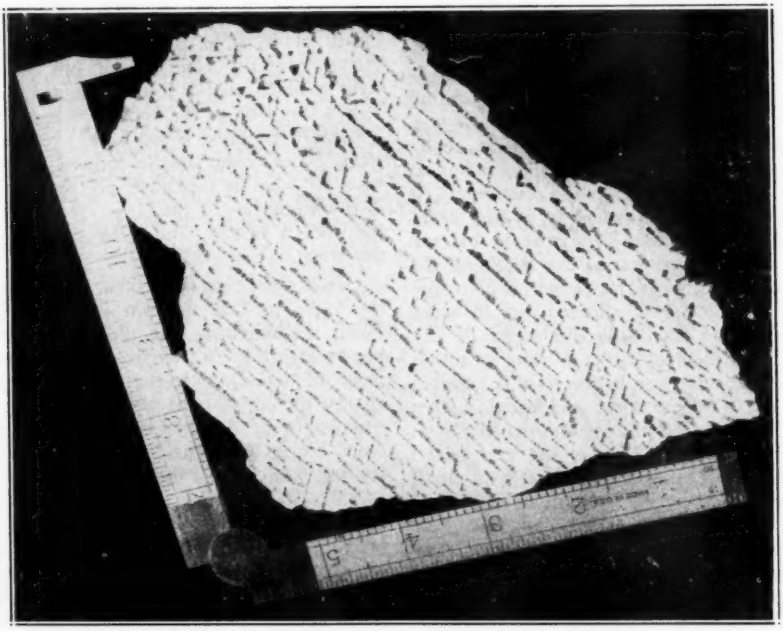
BY S. L. CLARK

Lancaster, Massachusetts

If you should be traveling through the New England States this fall don't fail to go to Freeport, Maine, and stop at Ike Skillin's place of business. "Ike" is an antique dealer and also a Rock Hound. You will find scattered among his antiques a great variety of minerals, some of which he will sell to you if you insist, but "Ike's" great interest is his lapidary, and in particular his MUD SAW.

"Ike" says he has always been known as an honest man until he got his mud saw operating at peak efficiency and ever since then he has had a hard time getting people to believe him. On my last visit with him I asked him to demonstrate for me. He put a piece of graphic granite in the saw that closely approximated 25 square inches and from the time the saw touched the specimen until the cut was completed the elapsed time was exactly 35 minutes and 15 seconds.

I thought that was pretty good for a mud saw, but "Ike" said that he had sawed similar material at a much faster rate and couldn't understand why the saw wasn't doing better. He had just finished reassembling his saw after replacing a bearing and the specimen he sawed for me was his first attempt following the overhaul job. After carefully scrutinizing his machine he suddenly exclaimed, "Now I know what's wrong." He had forgotten to install a piece of bicycle tire that was used to direct the mud solution to the point where the saw entered the cut. I regretted that it was impossible for me to stay longer while the



A fine specimen of graphic granite from Maine. It was this specimen which Ike Skillin sawed and polished.

necessary change was made in the equipment. As "Ike" took the piece of graphic granite from the saw I asked him how long it would take him to polish it. He turned immediately to his sanding and polishing machine and in exactly four and one half minutes handed me the specimen with a beautifully polished surface. For those of you who like to "make your own" you will certainly make a mistake if you don't pay "Ike" a visit.

CINDERELLA STONE

(*Continued from page 837*)

Place the pointed pliers on the wire about a quarter of an inch from the back of the bezel, and bend the wire down. See that it is straight so that the wire lines up evenly with the bottom of the oval. Place the wire on an anvil and tap lightly back and forth with a two-ounce hammer to harden the pin. Remove the hammer marks with emery polishing paper.

TOURMALINE FROM NEW YORK TUNNEL

BY T. ORCHARD LISLE

On August 2, 1947, I made another visit to the rock pile at the Battery, in New York City, taken from the tunnel under New York harbor, and was rewarded by finding a quartz boulder of about 30 lb. full of black tourmaline crystals and mica. Most of the crystals were at right angles to the grain of the quartz, so were broken. They crystals ranged from one-sixteenth inch to one-half inch in diameter and one-inch in length. One broken crystal, however, was over one-inch in diameter. There was one garnet of about half-inch diameter in the boulder, from which a piece broke off exposing a tourmaline in its center.

While I was hammering and chiseling away, along came Mr. Hawkins of the New York Mineralogical Club (I believe that was Dr. Alfred C. Hawkins of Bound Brook, N. J.), and he too was enabled to take away a nice sample studded with tourmaline crystals. One piece that I retained is about 6" by 4", and contains 14 unbroken crystals, and at least 30 broken specimens. The largest crystal on this piece is one-quarter inch by three-quarters inch.

A sandhog who was watching me work, told me that the tourmaline-bearing quartz came out about three weeks ago, and that there probably is plenty under the pile adjacent to the Ferry Building. He found one piece full of good-sized tourmalines and placed it to one side to take home, but when he went to look for it later, it was gone.

In addition to the tourmalines I found some poor quality garnets and pyrite up to one-inch diameter, and some micromount size garnets of good quality. In the rock pile near the old Aquarium, the boulder with blue and white cyanites is still there for anyone who would like a little sledge hammer work. It is to be found in a quartz vein in a 500 lb. rock., and is on the lower level.

REFERENCE

Garnets from New York Tunnel. *Rocks and Minerals*, May, 1947, p. 417.

Copper in Vermont

In the first half of 1946, a total of 3,290,000 lbs. of copper, 10,000 ozs. of silver, and 90 ozs. of gold were produced at the Vermont Copper Co's. mine at South Strafford, Vt. Chalcopyrite and pyrrhotite are the ores of this mine.

South Strafford is in southern Orange County, of eastern Vermont.

Oldest American Mine Still Operated

What is said to be the oldest mine still working in the United States is the La Motte lead mine in the Fredericktown district of Madison County, S. E. Missouri. The area was first visited in 1541, and lead was first discovered in 1715, and its mining started in 1723. Can any reader top this one?

The Rocks and Minerals Association

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To stimulate public interest in geology and mineralogy and to endeavor to have courses in these subjects introduced in the curricula of the public school systems; to revive a general interest in minerals and mineral collecting; to instruct beginners as to how a collection can be made and cared for; to keep an accurate and permanent record of all mineral localities and minerals found there and to print same for distribution; to encourage the search for new minerals that have not yet been discovered; and to endeavor to secure the practical conservation of mineral localities and unusual rock formations.

Ever since its foundation in 1928, the Rocks and Minerals Association has done much to promote the interest in mineralogy. It has sponsored outings, expeditions, formations of mineralogical clubs and the printing of many articles that have been a distinct contribution to mineralogy.

Those of our readers who are members of the Association can rightly feel that they too were sponsors of these many achievements that have helped to give mineralogy a national recognition. Among your friends there must be many who would like to have a part in the Association's work—to share with you the personal satisfaction, the pleasure, and the benefits of membership. Will you give your friends this opportunity to join the Association by nominating them for membership?

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Affiliation with the world's largest mineralogical society cannot fail to increase membership, enlarge circles of acquaintanceship, and stimulate a keener interest in mineralogy.

CLUB AND SOCIETY NOTES

Attention Secretaries—If you want your reports to appear in the November issue, they must reach us by October 20th—the Editor.

Pacific Mineral Society, Inc. of Los Angeles, California

Mr. Arciniega Talks on Pegmatites

On July 11th, 1947, the Pacific Mineral Society, Inc. heard the always popular and well-known speaker, Mr. Victor A. Arciniega. In the words of the late beloved Leo Cotton, "To those who don't know—and they are few —let it be known that Mr. Arciniega was born in Durango, Mexico. Legend has it that he had a pick in one hand and a lens in the other. He ran a test on his first meal and cut his teeth on a quartz crystal."

Mr. Arciniega's subject was "Geology of the San Diego Batholith with special Emphasis on the Mineralization and Enrichment of the Pegmatites." Some of the pegmatites discussed were those at Cahuilla, Pala, Ramona and Julian. Mr. Arciniega described how huge masses of igneous intrusive rock had forced their way towards the surface, forming great batholiths, and as these great masses cooled, the granites, diorites and gabbros were formed. As these rocks slowly crystallized during the cooling, the lower melting minerals were gradually concentrated in deep-seated reservoirs, and as cracks and crevices developed in the mass of rock, this still liquid material was forced up through these openings. Mr. Arciniega then went on to explain that it is now believed by geologists that the deposition of minerals in these pegmatites was not simultaneous, but that after the first filling of the cracks and crevices there were several later migrations of vapors and solutions up through these channels, with the results that minerals of many different kinds were formed at various stages.

Mr. Arciniega then told us about where the more precious minerals and gems could be found, saying that where the rock is rich in iron, the black tourmaline and iron minerals would predominate. Where lithium is present, the precious red and green tourmalines are apt to be formed. He also discussed the occurrence of beryl, topaz, the rare tantalates, columbates, tin and many other of the minerals that make pegmatites so interesting.

This month a cool place for the field trip, on July 20th, was chosen. It was the Speer Museum near Huntington Beach, where Mr. and Mrs. Speer have a very fine collection of minerals.

Whitmore Talks on Modern Prospecting

The August dinner meeting of the Pacific Mineral Society, Inc. was held at the Chancellor Hotel in Los Angeles, at which time Mr. Norman Whitmore, a graduate of the Colorado School of Mines and owner of the Mecco Assayers, gave us interesting and instructive information about modern ways of prospecting. After mentioning the Tommy Knockers (the miners' "gremlin") and the great Oof Bird (which miners try to follow because, according to them, it builds its nest in a great rich ore body and lays golden eggs), he then enumerated the various methods of modern prospecting for valuable minerals. In the past, prospecting was mainly for gold and silver, but now, because of recent developments, there are many metals and minerals which probably would bring greater returns than gold. The prospector has a better chance now than he had in all history. Formerly the old prospector would go to the mouth of a stream and if he found a piece of quartz, he would prospect up the stream until he found the source of the quartz. Now, however, he has available many modern devices which assist him in locating possible mineral deposits. He can use aerial photography to map locations; with the spectrograph, analyses can easily be made that will show the rare as well as the common elements, and some of these rare metals demand a very high price. There are also the magnetometer, helicopter and a number of late inventions and developments. The recent war especially has brought out many new devices that are of great value in prospecting. Mr. Whitmore told us that the equipment needed for actual field work is very simple. the three main tools being a steel-handled pick, a hand lens, and the great horn spoon. With these the prospector can obtain his sample, examine it with the lens, crush it with his hammer and pan it in his great horn spoon.

Mrs. O. C. Smith
Pub. Chairman

Southwest Mineralogists

Southwest Mineralogists let out their belts to partake in an elegant sufficiency at a barbecue at the home of Harold and Gladys Eales, 3126-77th St., Los Angeles, on July 26, 1947.

During the course of the evening, Mr. Eales showed colored slides of the recent state federation exhibit at Santa Barbara as well as the field trip to Mint Canyon (Los Angeles County), Calif., at the home of Mr. and Mrs. E. R. Hickey. Later in the evening, Mr. Eales also demonstrated with more colored slides on the cycles of rocks, and how they are carved from Zion National Park, Bryce Canyon, Kaibab Forest, North rim of the Grand Canyon, and Death Valley. "The Sequence of Erosion of Rocks" was then told by Mr. Victor Arciniega.

The "OHS" and "AHS" of the Eales" display of rocks and minerals were greatly enjoyed by all.

Mariann R. Nowak,
Cor. Secretary

North Country Mineralogical Club

The regular meeting of the North Country Mineralogical Club was held on July 24, 1947,with visitors from New Jersey among those attending. The program was furnished by Robert Rex, a new member of our club, who returned in June from over two years in Costa Rica. While there, he had visited mines and mineral locations in Guatemala, as well as Costa Rica. His talk about the country and its mineral resources was illustrated with colored slides which he had taken. Besides giving us a vivid picture of the country, both the slides and his talk gave us a good comprehension of its minerals. He had actual specimens of practically all those pictured. There were views of a number of volcanoes and their craters, with close-ups of the various types of lava formations. One series showed a gold mine, and all the steps in processing from bringing the ore from the mines, to the refined gold, ready to be sent to the mint.

At this meeting, plans were made for two fields trips which have been held during August. On August 3rd, we went to the jasper quarry near Milton, Vermont. Most of the material found there is actually jaspilite, a semi-precious gem-stone variety. It is very tough, and good specimens take a beautiful polish. Jaspilite is formed by metamorphosis of a conglomerate, colored by hematite. It makes showy specimens because of its brilliant red color, frequently coated with deep blue azurite, green malachite, and yellow limonite. Visitors from New Jersey and Brooklyn accompanied us on this trip.

On August 17th, another all-day field trip was held. This time the objective was Valcour Island in Lake Champlain. The two types of limestone on the island are rich in fossil specimens, and we came back well loaded down with them. We were joined by guests from Princeton, N. J., Syracuse, N. Y., and Stratford, Conn. Mr. and Mrs. James McKeen of Stratford, members of the Bridgeport and New Haven clubs, had come up especially for this trip.

In addition to these regular activities of the club, a number of the members spent a very enjoyable evening on August 12, when Mr. and Mrs. Richard Sylvester of Syracuse, members of the Rochester club, held "open house" for rockhounds, at the camp where they are spending their vacation on Long Pond, near Keeseville. Mr. Sylvester had a part of his collection of minerals on display, including many beautiful fluorescent ones. He gave to those of us who were there, nice samples of "Herkimer diamonds" and the rare blue celestite. The latter he had secured at Chittenango Falls, New York.

Gertrude E. Cone, Secertary
Keeseville, N. Y.

Yavapai Gem and Mineral Society

The mineral show held by the Yavapai Gem and Mineral Society of Prescott, Arizona, July 19 and 20, 1947, was a complete success. There were 739 visitors who registered, and many who did not register. Crowds stood outside viewing the window displays throughout the greater part of the both days. Twenty-two states were represented among the vacation visitors, and 25 Arizona towns from all over the state. Z. E. Roberts made a special trip from Yuma to view the displays, as did many others from nearer towns. The show was held in the display room of the Arizona Power Company.

Exhibits of the members covered a wide variety of colorful minerals, beautiful crystal formations, and polished stones. Almost unbelievable patterns and colors wrought in nature's work shop were revealed to an admiring public through the cutting and polishing of the local lapidaries.

Wonders of the mineral kingdom were strikingly displayed in the fluorescent exhibit of Mr. and Mrs. Fred Wilson, of the Fred Wilson Indian Trading Post of Phoenix. Minerals which react to the ultra violet light were attractively arranged in a large, black cabinet under the ultra violet light. Serious faced folk viewed the glowing rocks, and then read the little story of the atoms which play such a dramatic part in the phenomenon.

One of the outstanding exhibits was a gold pan surrounded by gold ore from the Bradshaw Mountains. In the pan was some gold dust under a magnifying glass. Pasted on the show case was Reg Manning's cartoon announcing the show, with the humorous inscription "Please don't handle the gold nuggets". This display belonged to M. R. Hagar.

Miss Andres exhibited an unusual collection of gadgets which had lain in a creek bed near copper deposits, and which nature had coated with copper.

Among the unusual minerals and polished stones of Mr. and Mrs. E. E. Michael were some of the large Brazilian quartz crystals made famous by radar during the war. Also a group of exquisite cameos. Mr. Michael does his own lapidary work.

Moulton and Ida Smith's collection contained many colorful specimens cut and polished by Mr. Smith, and rare specimens of malachite crystals, galena, and native copper with beautiful chalcotrichite inclusions, presented by Dan Healy, of Poland Junction.

Mrs. J. Walter Jones exhibited a group of cabochons arranged in a floral pattern. The stones were cut and polished by Mr. Jones, but the arrangement was her own original idea. Also a collection of saganite, moss agate and other gem stones from Bertha Schell's claim at Camp Wood.

Prehistoric Indian gems and arrowheads were displayed by H. L. Womack, Arthur Hunter, and E. H. Clark.

Miss Bobby Surratt had the following in-

scription on her exhibit: "A new member. Accumulation of one field trip, one small cash expenditure, and much inquisitive talk." Miss Surratt's specimens were all identified but one, which was labeled "Just Rock."

Mr. and Mrs. A. De Angelis, Jr. exhibited a miscellaneous collection of rare minerals and crystals.

Mrs. Peggy M. Kelley, of Phoenix, displayed photographs of lapidary equipment, showing how gem stones are cut and polished.

Outstanding exhibits among the junior members were those of John Butcher, Blaine Bowman III, and Barbara and Sidney Hagar. Their collections represented an excellent variety, nicely displayed and labeled. The youngsters all did a fine job assisting with the show.

Especially interesting items sold from the sales table were Marion Reese's mineral covered crucibles and tiny fireplace, and Jeanette Michael's paper weights made from clusters of quartz crystals.

The Yavapai Gem and Mineral Society's first show proved of sufficient interest so that the members are already formulating plans for another one next year.

Ida Smith, Secretary.

Rocks and Minerals Club of Woodstock, Vermont

The members of our club now have the good fortune of possessing their official membership card. This is printed on light green material and bears the official cut, an outline of Vermont with twinned double-terminated quartz crystals framing the club's name.

On July 23rd, 1947, several members motored to Springfield, Vt., to hear Dr. Wolf of Peabody Museum give a graphic description of the rich pegmatite of the Palermo Mine near the town of N. Groton, N. H.

We profitably took an unofficial trip to Bridgewater and Plymouth, Vt., on July 13th. At this time we explored the Plymouth limestone caves with their inverted potholes and druse-lined passages. Following a visit to an old serpentine area, we panned for placer gold. Specimens for the day included an interesting calcite occurrence, limestone and druse from the caves, burnt limestone from an old outdoor stone kiln, serpentine in several forms, and several good colors of placer gold.

During the social period of recent meetings articles have been presented on physical geology, copper, and limestone caves. A showing was made of fluorescent specimens under the radarlite.

The official July field trip took us to the Pierce Fluorite Mine in Westmoreland, N. H. We brought back small but fair specimens of green and purple fluorite from the old workings, fluorite "sand" from the newer tailings, beautiful transparent needle-size quartz crystals, traces of massive pyrite, malachite colorings, and lovely slabbed museum pieces of mixed quartz and green and purple fluorite. Enroute we were pleased to visit the desert near Walpole, N. H., and also a rock sales stand. Our adventure was climaxed by a late call to Ascutney Mt. for the view and green granite fragments, which figure so dramatically in tracing the path of the glacial period.

Ronald W. Gallup
Club Adv.

Wisconsin Geological Society

At the June 2nd, 1947, meeting of the Wisconsin Geological Society the annual reports of the Treasurer, Program Committee and Activities Committee were read.

The Society then elected the following officers for the coming year:

President—Benedict P. Bagrowski (founder of the Society)
Vice-president—Kathryn E. Montague
Secretary—Wilma B. Cox
Corresponding Secretary and Historian—Ida Vukovich
Treasurer—Ruth Miller
Director—3 years—Conrad Oakland
Trilobite staff—Herbert Poetzsch—Editor
Trilobite staff—James O. Montague.

On recommendation of the board of directors, Dr. Gilbert O. Raasch, of Illinois State Geological Survey Division, Urbana, Ill., was unanimously elected an Honorary Member of the Society.

Wilma B. Cox, Secretary
6650 N. Elma Tree Rd.
Milwaukee 9, Wis.

Reorganization of Southern Appalachian Mineral Society

At a meeting at the Buncombe County Courthouse on July 26, 1947, reorganization of the Southern Appalachian Mineral Society was effected. The society is composed of men in Western North Carolina who are interested in minerals as a hobby and as a commercial field, including amateur collectors, professional mineralogists, and mine operators. The aims of the society are: "To promote good fellowship and better acquaintance among its members, to add to the available information regarding mineral deposits of both commercial and museum material, to make such information readily accessible to the members, and to foster a free interchange of ideas."

The society was active for a number of years in the past, but has been inactive since 1935. Four meetings are held each year including three field trips to interesting mineral localities in this vicinity. The indoor meetings usually include a speaker on some phase of mineralogy. In the past, one project of the organization was to prepare collections of minerals from various counties for presentation to the county schools.

At the recent meeting, new officers and a board of directors were elected. These officers are: M. K. Banks, of Asheville, president; W. S. Wallen of Enka, vice-president; Carl G. Mauney of Enka, secretary-treasurer; Burnham S. Colburn of Asheville, Carroll Rogers of Tryon, and Bradley Johnson of Asheville, directors.

Preliminary plans are being made for a field trip to the Spruce Pine District this fall.

LANDER, WYOMING
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MIXED BLACK AND BROWN AGATE. Big Horn mountains. Massive. One Pound **$1.00**

RHODONITE. This has been the most popular stone of the year, and owing to finding it ourselves, on a trip to Nevada, we can cut off the middleman and sell cheaper. Pound **$1.00**

SNOWFLAKE OBSIDIAN. From wonderful Utah, the land of the Morman's. Pound **75c**

BRAZILIAN AGATE. We will never handle Brazilian Agate again. We never get the cost of cutting it, out of it. It's nice but we are tired of it. Out it goes, slice **$1.50**

VARISCITE—NEVADA SEAM. We will be frank, it has quite a bit of matrix, and that is why we have cut the price from **$2.50.** a pound to Pound. **$1.00**

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